

THE IRON AGE

THURSDAY, FEBRUARY 21, 1889.

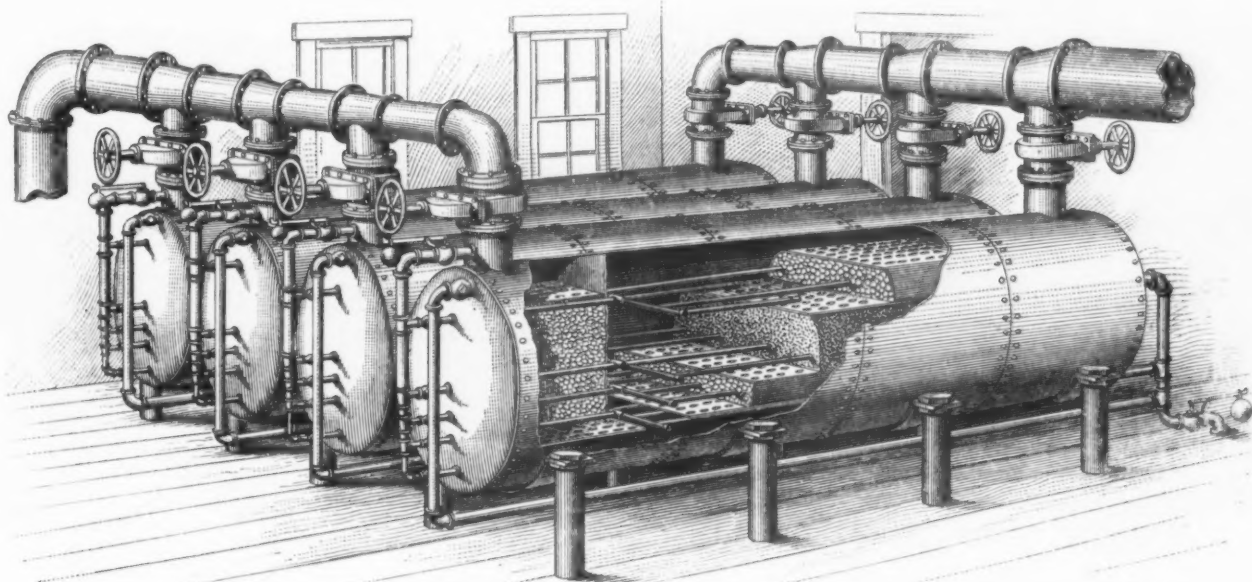
A 5,000,000-Gallon Filter.

Although the fact that water can be purified by passing it through certain materials has been long known, the purification of large volumes by mechanical filtration, without resorting to chemicals of any description, has only received close attention during the past few years. Early filters were exceedingly slow in their operation, and the quantity of water passed by them was accordingly very small, so that their capabilities were limited to a narrow range. Now it is by no means uncommon to filter the whole water supply for a city, and to accomplish this with apparatus simple in construction and of comparatively small size. In addition to this, the modern filter, having proved itself to be so reliable in operation and so economical as regards running expense, has entered

sand. The construction and arrangement of the sand and gravel beds will be understood from the perspective view, in which a portion of the shell of one of the filters is broken away. Water enters through the pipe A, its admission being controlled by the valve C. It passes downward through the gravel in the smaller chamber, under the partition, up through the gravel, sand and gravel beds in the larger chamber, and thence through the outlet pipe B. The first screen arrests any large particles which may be brought in by the water; the first gravel bed removes the larger percentage of impurities, while the purifying operation is completed as the water flows through the other beds. As the entire lower portion of the filter serves as a water chamber, the upward flow is distributed in such a manner that each section of the

in a large volume through the filter, no single part of which presents more resistance to its flow than another. One remarkable feature of this filter—which is perhaps the largest ever introduced in a single works—is the small space required. The inside measurement of the room in which it is situated is $27\frac{1}{2} \times 28\frac{1}{2}$; 10 feet would give ample head room. Simple filters of this description have been long in use under the most trying conditions and yet no cause of failure to thoroughly purify the water has appeared. These filters are made by the Hegeman & Oliphant Filter Company, of 112 Liberty street, New York.

Warming Cars With Hot Water.—The Pennsylvania Railroad has about completed the fitting up of a train of five cars



THE LARGE FILTER BUILT BY THE HEGEMAN & OLIPHANT FILTER COMPANY, NEW YORK.

all the great industries to such an extent as to form an important part of the plant.

The filter of the great Spreckels sugar refinery now being erected near Philadelphia is illustrated by the accompanying engravings. This filter really consists of four separate filtering vessels, which receive their supply from the same source and deliver into the same outlet, and yet each filter is entirely independent of its neighbor. Each filter consists of an iron shell, shaped and made like a boiler, and of sufficient strength to withstand any pressure to which it may be subjected when in use. The shells are 5 feet in diameter and 21 feet long. A vertical transverse partition, placed 3 feet from the inlet end, and extending to within 10 inches of the bottom, divides the interior of each into two compartments. Near the top and at the bottom of the partition are horizontally placed screens which divide the smaller chamber into compartments. Between the screens gravel is placed. Extending along the larger chamber are two receptacles for gravel, each of which consists of an upper and lower screen, between which the gravel is held. These screens rest upon cross rods, and either can, when necessary, be withdrawn through the manholes H. Between these two screens is a bed of fine

bed acts to retain the impurities. In other words, there is no useless or idle portion through which the water does not flow.

Provision is made for automatically cleansing the filter, if by reason of the accumulation of impurities upon the first screen its action should be interrupted. The increased pressure arising from the stoppage would raise the safety valve E' which is in the pipe E. This pipe leads from the inlet pipe A down along the front of the filter, into which five branches enter. The branches are located as shown in the longitudinal section, Fig. 2. The upper four pass through the smaller chamber, and at the entrance to the larger each is provided with a so-called "manifold," G, shown in plan in Fig. 3. The water then enters the filter through the pipe E and the manifolds G, by which it is conducted to all parts. The sand and gravel are thoroughly cleansed and any refuse on the first screen is washed through the pipe F to the sewer connections at F'. From the main body of the filter the water passes through the pipe I. It is evident that, since the water passes upward through the large beds of sand and gravel, there is no danger of packing the material, and no necessity for ever forcing the water through, while the removal of impurities is more perfect, as the water moves

with a system of heating by hot water. From the Pittsburgh *Dispatch* we condense the following description of the main features: In the sand box of the engine are placed coils of copper pipes as closely together as possible. Water, originally drawn from the tender, passes through the coils and through suitably arranged pipes in the cars to the rear of the train, and then returns to the coils through another pipe line, the forced circulation being maintained by a small pump. Entering the car, the water passes through a Y leading up through the floor, and then along each side of the car under the seats to the rear. The exposed parts of the pipe are first covered with asbestos, then wrapped in hair cloth, then paper and canvas, which is painted. At each end of the cars is an automatic stop cock, provided to close the pipes and keep the hot water in the cars in case the train breaks in two.

The new edge tool works of the Fall City Malleable Iron and Steel Company, Louisville, Ky., have recently gone into operation, employing about 20 hands and preparing for a full practical test of the Hooper-Clark process. The company will devote their capacity at first to the production of hatchets, axes and hoes.

The Wrought-Iron Pipe Trade of the Northwest.

The consumption of wrought-iron pipe is rapidly increasing in the Northwest, and Chicago is now the most important distributing point in this country outside of Pittsburgh. The local production is quite small, the great bulk of the trade being carried on by outside manufacturers. The Crane Bros. Mfg. Company and the Fieldhouse & Dutcher Mfg. Company, both of Chicago, have plants for the manufacture of butt-welded pipe of small caliber, and the Haxtun Steam Heater Company have a plant at Kewanee, 130 miles south of Chicago, but there is no mill west

population and the constant march of improvement. Within the last five years the whole system of refrigerating on a large scale has been changed, and the production of artificial cold which was substituted has required large quantities of wrought-iron pipe. The salt blocks, as now operated, take a great deal of pipe. Manufacturers of agricultural machinery are using it more and more every year, finding that while it is fully as strong as a solid bar it is much lighter, and it recovers itself when accidentally bent instead of getting set. The increasing number of high buildings in Western cities causes a greater demand for fire-escapes, and all of them are now being constructed with a wrought-iron pipe extending from pave-

pipe up to 24 inches in diameter to meet the demand for large sizes. They contemplate making up to 30 inches at an early day. No other works make wrought-iron pipe larger than 16 inches, except in England, but the large sizes are there made by hand, while the National Tube Works Company use the regular lap-welding process throughout their whole line. The competition between wrought and cast iron pipe is made on the basis of the greater strength, lightness and freedom from leakage of the former. Thus, while a 6-inch cast pipe weighs 33 pounds to the foot, a 6-inch wrought pipe of five times the strength weighs but 8.6 pounds to the foot; an 8-inch pipe shows 42 pounds against 12.8 pounds; a 10-inch pipe shows

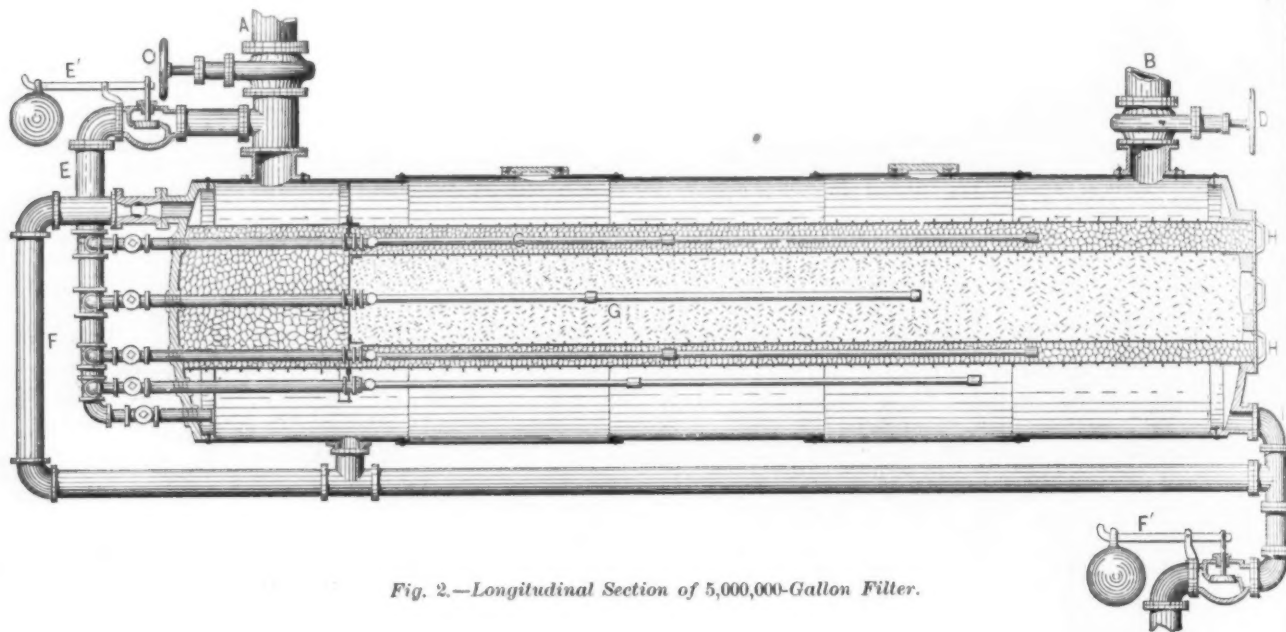


Fig. 2.—Longitudinal Section of 5,000,000-Gallon Filler.

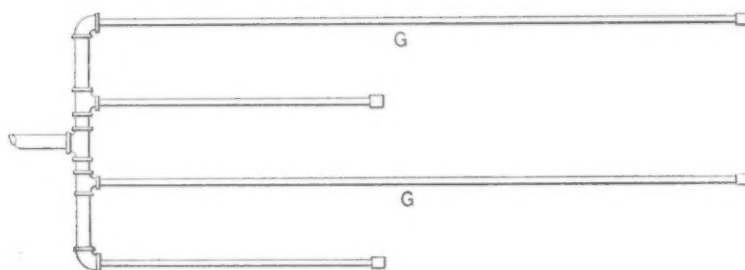
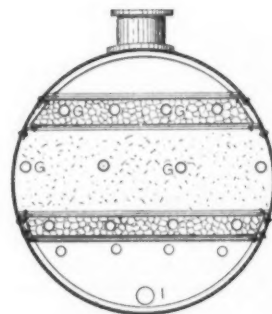


Fig. 3.—Plan of "Manifold."



Section through Fig. 2.

of Youngstown, Ohio, making lap-welded pipe or pipe of large diameters. The National Tube Works Company and the American Tube and Iron Company both carry stocks of pipe in Chicago. A. M. Byers & Co. and the Riverside Iron Works maintain resident salesmen, and several other manufacturers of both butt and lap welded tubes have established agencies with Chicago business houses having the proper trade connections. It is estimated that the annual sales of wrought-iron pipe in Chicago and its vicinity now amount to over \$4,000,000, notwithstanding sales made by mills not represented in Chicago and selling by correspondence or through travelers, the extent of which can only be conjectured.

The consumption of wrought-iron pipe in the Northwest, as in most other sections, is increasing by reason of the new uses being found for it, as well as the natural growth attending the increase in

ment to eaves to carry a stream of water to the roof in case of fire. The growth of steam and hot-water heating is also having its effect on the pipe trade, and in numerous cases wrought-iron pipe is being used as a casing for electric wires when buried in the streets.

An important field is, of course, found in the new natural-gas district of Indiana, in which more territory is constantly being opened up, requiring pipe for wells and also for distributing the gas to points of consumption. But a more constant demand for large pipes is expected in the distribution of water through Western cities. Large wrought-iron pipes are rapidly working their way into use for mains. The trade in this one item alone amounted to probably \$1,000,000 last year in the entire country, of which the greater part originated in the West. The National Tube Works Company are paying special attention to this matter, and are making

65 pounds to 16.6 pounds, and the difference continues in still larger sizes. The wrought-iron pipe of the same capacity will thus form a line about four times as long as its cast-iron competitor, weight for weight, while the increase in cost will not cover the whole of the difference. It is claimed that the joint used on the wrought-iron pipe precludes all possibility of leakage. The converse joint consists of a cast-iron sleeve, with concave grooves for the admission of molten lead, a projecting ring in the center of the sleeve of the same height as the thickness of the pipe to prevent lead from running into the pipe, and two slots into which rivets on opposite sides of the pipe engage when it is inserted and given a half turn. The pipes when laid with this joint are given an air-pressure test to insure perfection. These points, together with the difference in freight on the lighter weight, have given wrought pipe the preference over cast pipe in numer-

ous Western cities, particularly in remote localities to which freight rates are very high.

The prospective new uses for wrought-iron pipe in the West are of a similar character to those anticipated in the East. The Boston hot-water house-heating system from a central source of supply is expected to secure a foothold in other large cities, and if it does there will be a heavy consumption of wrought pipe for that purpose. The cities which are now suffering from the soft coal smoke nuisance are

is nearly 500,000 tons of ore. The company making the sale retains several thousand acres on which ore has been found, and their work of development will be begun early in the spring. The Palmer mine has produced over 500,000 tons of ore to date.

New Naphtha Boiler.

Some time since we described and illustrated the naphtha engines and boilers built by the Gas Engine and Power Company,

under the coil. The burner is a circular tube having a gap opposite the entrance and formed with holes along its upper surface. This, the main burner, is first heated by what may be termed an auxiliary burner arranged beneath it, and supplied with gas from a tank. The exhaust gas from the engine is led to a keel condenser. In engines above 16 horse-power the air is supplied by a blower run by belting from the main shaft, this insuring a more perfect combustion and more effective operation of the engine. The jacket covering the coil may be lifted off to permit access to the latter for cleaning.

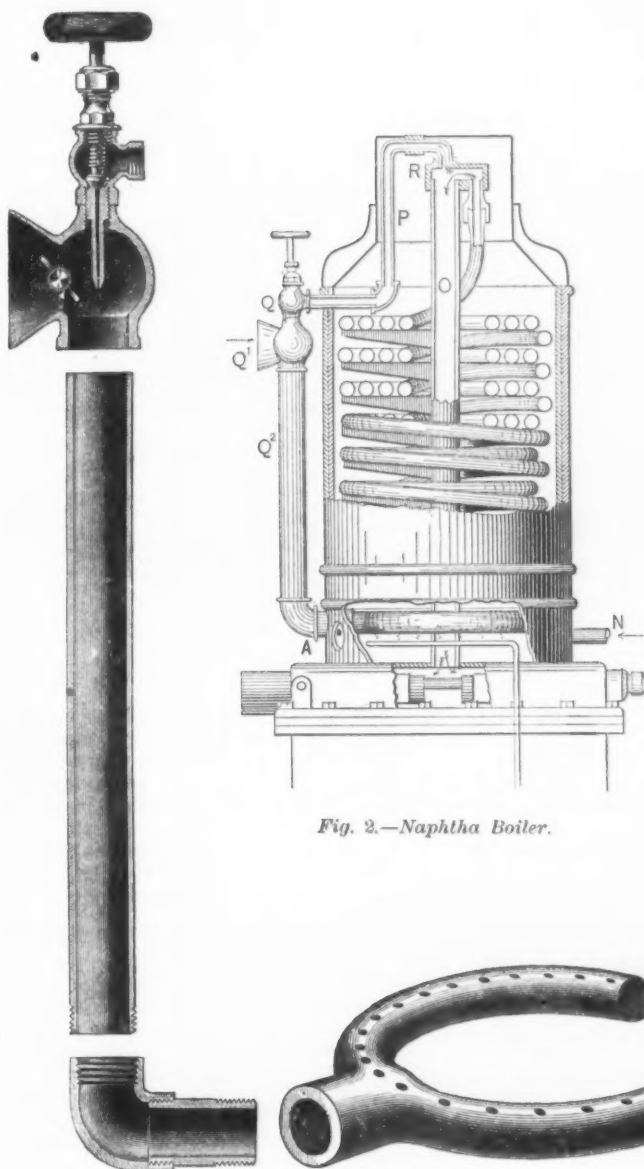


Fig. 2.—Naphtha Boiler.

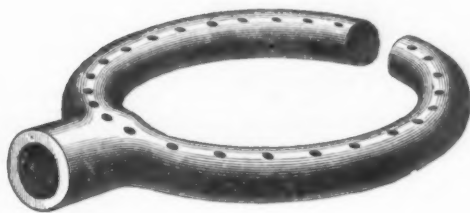


Fig. 1.—The Burner.

NAPHTHA BOILER, BUILT BY THE GAS ENGINE AND POWER COMPANY OF NEW YORK.

n anxiously looking for some means of relief, and there will be little obstruction thrown in the way of introducing a system of heating which will at the same time prove satisfactory to the users and beneficial to the community at large. If it also helps the pipe trade, that is the system which will meet with most favor from the pipe manufacturers.

A dispatch from Marquette, Mich., says that General Alger has bought the Pittsburgh and Lake Superior Company's iron mine for \$800,000, including 1800 acres of iron land. The mine has been a continuous producer since 1871, shipping 56,321 tons of ore last year. Its total production

of Morris Dock, New York City, for their launches. Since then several important changes have been made in the construction of the boiler, which is here illustrated. The boiler, Fig. 2, consists of copper tubing coiled as shown, each spiral consisting of four turns. The naphtha is admitted at the bottom instead of at the top as formerly. The burner, Fig. 1, is provided at its upper end with an injector, Q', supplied with naphtha gas through a pipe, P, leading to the boiler, as shown. The current of naphtha on its passage to the burner (which is lighted through the opening A in the retort) draws in air through the flaring opening Q', and the mixture thus formed burns as it issues from the small holes in the burner

The Pietzka Revolving Puddling Furnace.

According to Dr. Wedding there are seven of Pietzka's double-hearth revolving puddling furnaces at Witkowitz, in Moravia, and seven others are to be added to those now erected at Zawadski. At the latter works the production of one of these furnaces is found to amount to three times that of a furnace of the ordinary type, besides which only six men are employed instead of twelve. The coal used is less by 40 per cent. in the case of the older type of the revolving furnace, and it is hoped that a further reduction of 20 per cent. will be effected in the case of the more improved form of furnace now in course of erection. The repairs are stated to be unimportant. The arch lasts for many months. The fire bridge is repaired every four weeks. The regenerators are cleaned out every fortnight, two hours being found sufficient to effect this. The heating-up of a cold furnace can be completed in five hours. The percentage composition of the producer gas used in the furnaces at this works is about as follows:

	Heavy hydro-carb'ns.	Light hydro-carb'ns.	CO.	H.	O.	N.
CO.	1.4	0.4	2.3	27.8	8.9	1.4
						57.8

The percentage of carbonic oxide rarely falls below 26, and is frequently above 30. It is stated that the loss of metal in this mechanical puddling furnace is somewhat less than in the ordinary one. The following table gives comparative working results of the two furnaces:

Month.	Ordinary furnace.		Revolving furnace.					
			With coal.			With gas.		
	Production, Tons.	Loss, Per cent.	Coal used, Per cent.	Production, Tons.	Loss, Per cent.	Coal used, Per cent.	Production, Tons.	Loss, Per cent.
First ..	87.6	9.3	105.6	279.3	6.6	67.3	24.02	44.8
Second	98.6	9.8	100.9	314.4	6.1	65.8	337.0	42.4

These results were obtained from furnaces at the Witkowitz works.

From a number of letters which have reached us it is clear that some of the readers of *The Iron Age* have construed the fact that we published in our issue of February 7 a statement embodying the claims made for the Robert process as an indorsement of it. As we distinctly stated, no representative of *The Iron Age* has yet examined the plant or investigated the process. We made no comment because that did not seem necessary with any one who is familiar with steel manufacture.

The boiler-makers in the Risdon Iron Works, at San Francisco, struck on the ground that certain iron plates being used in the repairs of boilers of the steamship Australia were made abroad.

Ball Bearings.

The accompanying engravings are intended to serve as suggestions concerning the use of ball bearings. The designs

have little doubt that ball bearings will ultimately be widely used for both light and heavy work, and for slow and quick speeds. Other things being equal, the fact that they reduce the loss due to fric-

being provided with a separate set of machinery, boilers, shafts and screws. Each

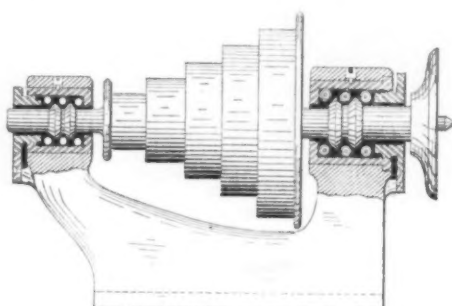


Fig. 1.—Applied to Head Stocks.

were made by J. J. Grant, superintendent of the Simonds Rolling Machine Company, of Fitchburg, Mass. An examination will show that Mr. Grant has so chosen his subjects as to embody the three principal features of all bearings, and has endeavored to eliminate the loss of power due to friction in bearings as ordinarily constructed by the use of balls. His designs are applicable to the following cases: A cylindrical shaft revolving in a cylindrical journal, a thrust bearing, and a combination of these two.

In Fig. 1 the ball bearing is shown applied to the headstock of a lathe. In this case the spindle is formed with annular ridges, which serve as both thrust and rolling bearings, the balls being arranged as clearly shown. The two next illustrations are of shafting of slow and quick speeds. In the first the balls are placed as closely as may be in a cylindrical casing surrounding the shaft. In the second case, Fig. 3, the balls are arranged in rings or circles, each ring being separated by a disk, and the shaft being provided with a sleeve. The next drawing is somewhat similar to Fig. 3, except that the balls come in direct contact with the shaft. In

tion to a minimum is acknowledged. Now that practically perfect and uniform balls of tempered steel can be obtained at a moderate cost, their more ex-

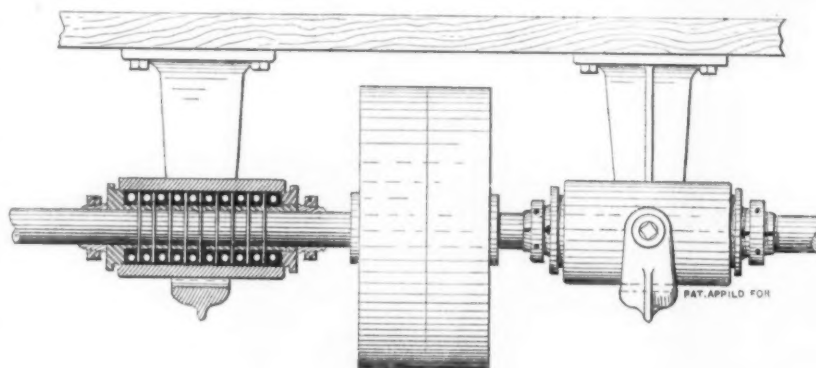


Fig. 3.—Applied to Shafting.

tended use in bearings generally seems to be assured.

The new Hamburg steamship Columbia, to be put on the line next spring, in some

has a double bottom. The boilers are placed in three water-tight compartments, completely cut off from one another, so that even if two of the compartments should be flooded the boilers in the third would be able to keep one of the engines working. The vessel's speed is guaranteed to exceed 19 knots, or 21½ miles, per hour.

Encouragement of Ocean Shipping.

Measures for the upholding of our steam ocean marine are likely to receive special attention in Congress at an early day. Despite all that has been done, be it much or little, either by Congress or by State legislature, to relieve ocean commerce from needless burdens, the amount of this class of tonnage afloat steadily diminishes, although at a lessened ratio, as shown by the report of the United States Commissioner of Navigation for 1888. It is quite certain that a strong effort will be made to bring about a radical change of policy

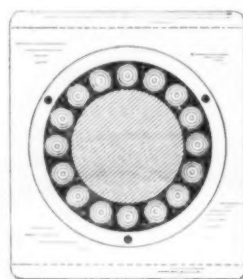
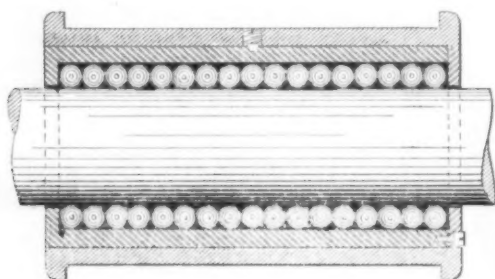


Fig. 2.—Applied to Heavy Journals of Slow Motion.

Fig. 5 longitudinal motion of the shaft is prevented by angular bearing surfaces. As applied to cranes, Fig. 6, and water-wheel steps, Figs. 10 and 11, and jack-screws, Fig. 9, where the object is simply to provide a bearing upon which the load-bearing parts may turn easily, the balls are placed in angular grooves, and support flat bearing plates, except in the case of the crane, in which both upper and lower bearings are formed of angular grooves to receive the balls. The bearing for the upper end of the crane-post resembles that for a shaft. In the case of a worm shaft, Fig. 8, the thrust in both directions is received by balls placed in angular grooves in a collar on the shaft, the second bearing for the balls being formed by the end of the journal box. The ball bearing when applied to a propeller shaft to take up the thrust is shown in Fig. 7.

The subject of ball bearings so briefly outlined in the above text, and so plainly and widely illustrated by the engravings, will bear careful and close study. We

respects represents the most advanced type of steamship architecture. The ship has a length of 463 feet, a width of 56 feet,

and a depth of 38 feet, and is of 10,000 tons displacement and 12,500 horse-power. A longitudinal bulkhead, running from stem to stern, divides the ship, each side

respecting the part which the general Government should take in the maintenance of steamship lines to foreign ports. So long as foreign governments persist in

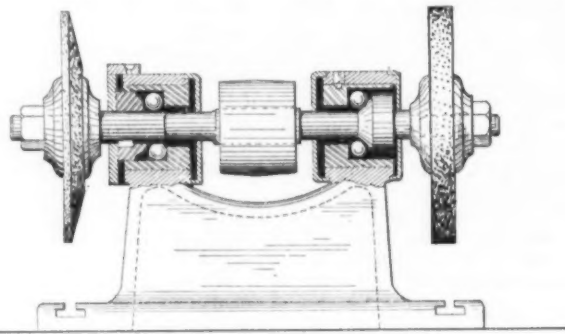


Fig. 5.—Applied to Grinding Machinery.

lavishing large sums in aid of steamship lines on all principal routes of traffic, satisfied that the benefits accruing indirectly to the nation at large return a full equivalent for the amounts thus expended, just so long must Americans, less favored in the manner described, be crowded out from the field. This is a view commonly

our coastwise shipping, he said the extent of its growth "can be appreciated only by a comparison of its effective tonnage at different periods on the accepted basis of computation, which allows 1 ton

that our patriotic pride is changed to a feeling of humiliation. How great this difference is will be seen," he said, "when the statistics of the growth of our shipping in the home trade are compared

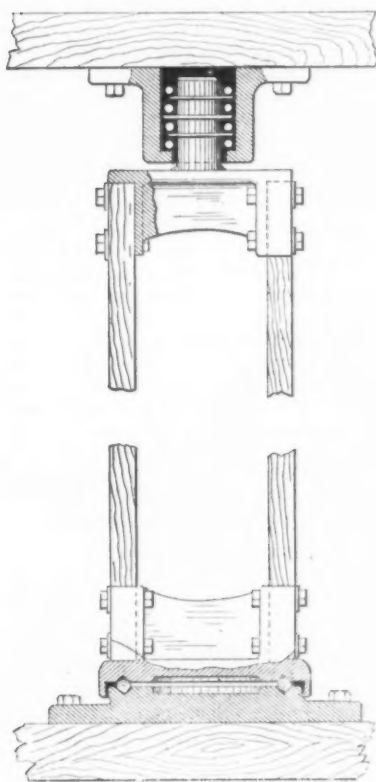


Fig. 6.—Applied to Crane.

taken and which seems to have become more firmly established in the convictions of public men.

The number who accept "free ships" as affording promise of an adequate means of relief are comparatively few. Perhaps no better indication can be cited of the prevalent tone of sentiment among the class of men destined to lead in public affairs for some years to come than is afforded by the addresses delivered before the Boston Chamber of Commerce at its annual dinner a few days ago. President Spears, in his opening remarks, said that 30 years ago upward of 100 prominent

of steam vessels to be equal in carrying efficiency to 3 tons of sailing vessels. On this basis our coastwise shipping in 1840 was the equivalent of 1,689,814 tons of sail. In 1869, after it had recovered from the disturbing effect of the civil war, the tonnage of our coastwise shipping was the equivalent of 4,300,892 tons of

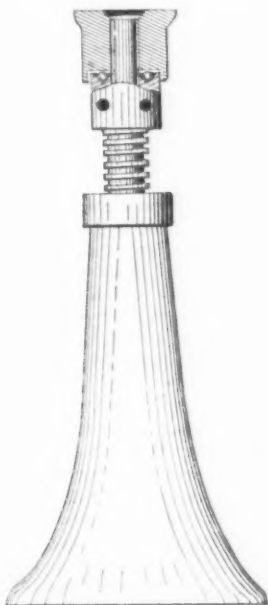


Fig. 9.—Applied to Jack Screw.

sail. On the 30th of June last this equivalent tonnage had reached 6,177,475 tons, an increase of 43 per cent. in two decades. Thus to-day we can point with pride to the fact that the home fleet of the United States has a tonnage three times that of the home fleet of the United Kingdom and

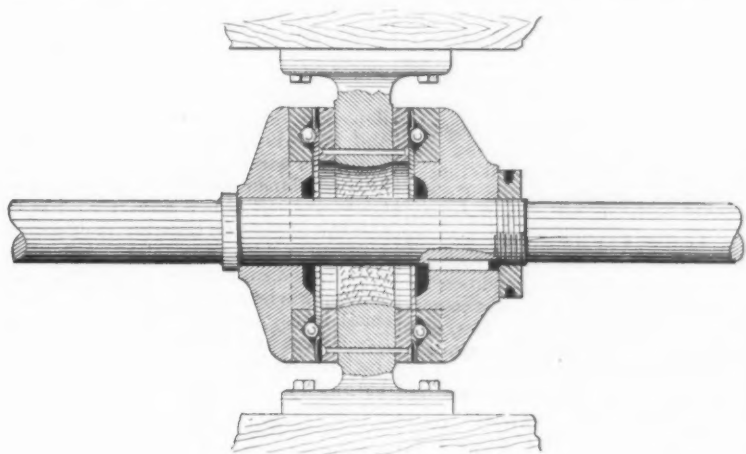


Fig. 7.—Applied to Propeller Shaft.

merchants in that city were engaged in ocean traffic representing 700 sail of vessels, not one of whom is known to the trade to-day. Ex-Governor Dingley, of Maine, who has been prominently identified with the shipping interests of that State, followed in response. First, in reference to

five times that of any other nation, and increasing more rapidly than that of any other country on the face of the earth. It is when we turn from our magnificent fleet of vessels engaged in the home trade to the small and diminishing fleet of American vessels in the foreign carrying trade

with the official statistics of the decline of our shipping in the foreign trade. Since 1855 American vessels have been carrying each year a smaller proportion of our exports and imports, the decline having been

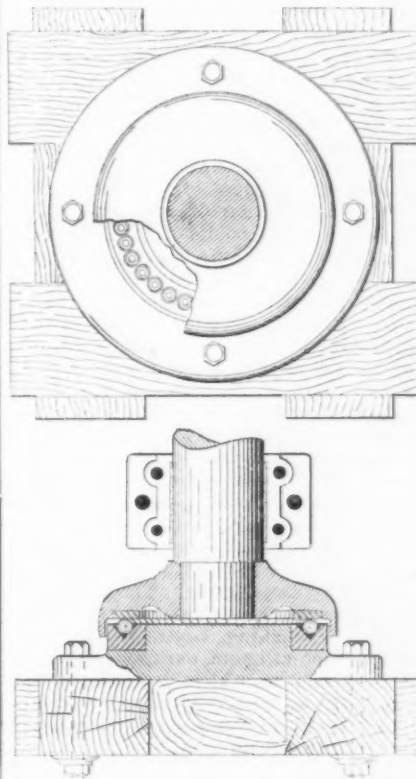


Fig. 10.—Applied to Water-Wheel Step—Wheel Above Step.

9 per cent. in value and 5 per cent. in tonnage in the six years before the war, and 14 per cent. in value and 18 per cent. in tonnage in the 23 years since the war, until at the close of the last fiscal year our registered tonnage was only 943,784 tons (only 183,397 being steam), of which it is

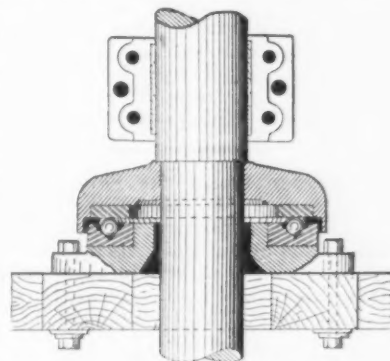


Fig. 11.—Applied to Water-Wheel Step—Wheel Below Step.

estimated that hardly more than 600,000 tons were actually engaged in the foreign trade."

Basing his remarks on official statistics Mr. Dingley combatted the assumption

that tariff changes either since or before the war have anything to do with the general condition, our foreign commerce, our exports and imports having never increased so rapidly as during recent years. The adverse change is due, rather, to the revolution from wood to iron and steel in materials, and from sails to steam as a means of propulsion, Great Britain having been enabled through her iron and coal mines and cheap labor to demonstrate the rightfulness of her claim to the supremacy of the seas. Moreover, aside from these natural advantages, by extending aid to steamship lines by means of "postal subsidies" and profitable contracts to builders, the British Government was enabled to defy competition from any other source. Mr. Dingley contended that in the present exigency the shipping question should be grappled with solely on patriotic and commercial considerations.

In looking for practical measures, Mr. Dingley said: "There are some important steps which should be taken without delay. In constructing a new steel navy the contracts should be given to as large a number of existing shipyards and individuals who will establish such new yards as soon as possible, with a view of securing plants for the construction of iron and steel vessels at various points of the Atlantic, Pacific, Gulf and lake coasts. All imported materials for the construction, equipment, repairs and supplies of our vessels for the foreign trade should be admitted with a rebate of duty on proof that they have been used for this purpose, on the same ground that imported materials for the making of articles for export have always been admitted nearly free of duty. The Government should adopt a policy to encourage the construction of steamships for the foreign trade of a character available as swift cruisers in time of war by offering a construction bounty on all such vessels built so as to meet the requirements of the Navy Department. The policy of the Government should be radically changed in making contracts for the ocean transportation of our foreign mails, and mail contracts should hereafter be given out so as to encourage the establishment of American steamship lines, instead of practically discouraging them, as is the case now."

Senator Hoar, of Massachusetts, addressing the Boston Chamber of Commerce, represented that we can expect no large foreign market for our manufactured goods until we can exchange our products with those of other countries in our own ships. Great Britain believes that she can maintain her position as a great manufacturing nation, that she can continue to have the exchanges of the world made and the accounts settled in London, only by maintaining this trade, whether it be profitable or losing in itself. Addresses of like tenor followed from three presidents of local commercial bodies. Altogether, the feeling manifested respecting the prospects for American shipping is regarded as of the most hopeful character.

The Jagger Ironworks Sold.—The Jagger Ironworks, on Martin Garrettee's Island, at Bethlehem, near Albany, were sold at auction by Nathaniel Niles, referee, the plant consisting of two furnaces and including 15 acres of land. Among those at the sale were: Hon. G. Burleigh and B. W. Burleigh, Ticonderoga; J. F. Harris and George D. Harris, Fort Edward; Jesse Billings, Ballston; Paul Cushman, Thomas W. Olcott, and P. J. McArdle, of this city. H. G. Burleigh bid \$10,000; S. W. Rosendale, \$15,000; Fred. Schifferdecker, \$16,000; Burleigh, \$20,000; J. F. Harris, \$25,000; Paul Cushman, \$30,000, and P. J. McArdle, \$30,100. The property was finally knocked down to P. J. McArdle for \$30,100. Ten per cent.

of the purchase money was paid on signing the contract of sale. We are informed by interested parties that the furnaces and sufficient land to operate them can be purchased of P. J. McArdle at a material discount from the amount paid by him.

Legal Decisions.

PARTNERSHIP—FIRM NAME SIGNED TO SURETY BOND.

One member of a firm signed the firm name to a surety bond without the knowledge or consent of the other members, and when the bond was sued upon, payment of the penalty being refused, the defense was set up that the signature was unauthorized. Plaintiff had judgment, and defendants took the case—*Fox vs. Hittson*—to the Supreme Court of Texas, where the judgment was reversed. Judge Walker, in the opinion, said: "The bond was not made in the business of the firm, or in settling up its old business. No acts are shown of either of the other members of the firm to bind them by this bond. They never knew of it until this controversy arose, and therefore could not ratify it. No act or course of business on their part appears in the record from which an estoppel can be inferred, and there is no want of knowledge of the want of authority on the part of the member signing by the obligees in the bond. It is a well-recognized rule that where one member of a firm uses its name outside of the business of the firm, and it is so shown, that it then devolves upon the holder of such obligation to show authority for such use, which may be by direct or circumstantial evidence, or a subsequent ratification will supply authority. It is also well settled that where a firm name is used as surety for a third person, the presumption is that such use of the firm name is outside of the business of the firm, and that in such a case the burden of proving assent, estoppel or ratification lies upon the person asserting the liability of the parties not acting as signatories. The charge below was misleading, and there should have been a new trial allowed on the motion made for it. We reverse the judgment and order a new trial."

COMBINATION TO RESTRAIN EMPLOYMENT.

A corporation was created for these avowed purposes: 1, for the cultivation of music; 2, for the promotion of good feeling and friendly intercourse among professional musicians; 3, for the pecuniary relief of the members of the corporation. In their by-laws the corporation declare that no member should perform in any orchestra or band in which any person who was employed was not a member of the corporation, or should employ any such person, and they required that a residence of six months in the United States should be a qualification for membership. T. was a member, and he was threatened with three fines of \$10 each for employing non-members; whereupon he sued for an injunction to restrain the corporation from enforcing the penalties, and got a judgment. The case—*Thomas vs. Musical Protective Union*—was carried to the general term of the Supreme Court of New York, where the judgment was affirmed. Judge Brady, in the opinion, said: "The effect of the by-law as to employment, which is not necessary to carry out the purposes of corporation, is to create a close corporation and to force each member of the profession to become a member also of the union, unless he prefers to abandon his calling, or seek some locality where he can employ his talents and exhibit his capacity to procure means for his support, or that of his family, if he have any. The by-law as to residence is

arbitrary and inconsistent with the purposes of the corporation; and it operates to proscribe the foreign musician from obtaining employment. There is no response to be successfully made to the charge that such elements are not only against public policy, but antagonistic to the right of every man to earn, by honest labor, lawful in itself, whatever it will command, whether the laborer or artisan or artist be foreign or native born. It would, doubtless, be a clever mode of securing, per force, the advantages of a successful union if the exclusion from labor of all musicians not members of the union could be accomplished, but this may not be done. Unions of a benevolent or protective character should be the result of good feeling and a just appreciation of the rights of others and not arbitrary or oppressive combinations. The inciting motive to join them should be fraternal, and not an apprehension of disaster. It has been justly said that associations have no more right to inflict injury upon others than individuals have to do so. The plaintiff by becoming a member of the union did not bind himself to observe any unlawful feature of the constitution and by-laws. When they are against public policy, and in restraint of trade, and, therefore, illegal and invalid, no assent or acquiescence can bind him."

CONSPIRACY OF LABORERS.

N. and others were indicted for conspiracy to compel certain coal operators to quit working by force of threats and menaces, and the prosecuting attorney used in his argument to the jury a caricature in *Puck*, a comic paper, entitled: "Suckers of the Workmen's Sustenance," the court having given him permission to exhibit it. A conviction was had, and the case—*Newman vs. Commonwealth*—was carried to the Supreme Court of Pennsylvania, on the ground that the use of the caricature prejudiced this case. The court, in its opinion, said: "With reference to the exhibition of the picture we cannot say that the court was wrong in permitting it. Things of this kind are very much a matter of discretion, and we are not disposed to review them unless we are satisfied that some serious wrong has been done."

War Vessels Launched Last Year.

A careful estimate places the war ships launched by the naval powers of the world in 1888 at 60, while more than 100 were building when it closed. England led with 15 vessels launched and 28 building; France launched 9 and laid down 15; Russia launched 2 and began 10; Germany put 6 vessels into the water and ordered or laid down 4; Italy launched 10 and laid down 18; Austria launched no vessel, but laid down or ordered 3; Sweden laid down 1; Denmark launched 1 and laid down another; China added 4 vessels to her navy and ordered laid down 4 more; Japan ordered 3 and launched 3; Chile ordered a new cruiser in England, and the Argentine Republic contracted for a 4300-ton ironclad; Brazil laid down a cruiser, and even Uruguay has contributed to the navies of the world, launching a small iron gunboat. The minor powers, like Greece and Portugal, have either contracted for or launched small vessels. Turkey has begun the work of building up her navy, laying down one ironclad and several smaller vessels. The United States launched 6 and laid down 6.

Modern steam hoisting machinery is to be placed on the ore docks at Cleveland by the New York, Pennsylvania and Ohio Railroad, and the line from Youngstown to Cleveland will be double tracked, \$1,000,000 having been raised in London for these objects. About \$200,000 have already been expended for freight engines.

Universal Milling Machine.

The cut here presented represents the long and well known No. 1 universal milling machine built by the Brown & Sharpe Mfg. Company, of Providence, R. I. The distinctive features of this machine were patented by Joseph R. Brown in 1865, and the original was first introduced to the attention of mechanics at the Paris Exposition of 1867, when its superiority for certain classes of work was at once recognized. The universal has all the movements of a plain machine, and, in addition, the table is fed automatically at an angle to the axis of the spindle, and the spiral head is so made and connected

68 provided for may be cut without interfering with the divisions obtainable from the index plate. The spindle may be moved through any required portion of a revolution or rotated continuously, and, by the use of the raising block, the spiral head may be set at any angle on the bed. A taper hole, $1\frac{1}{8}$ inches diameter at the small end, extends through the spindle and is fitted to receive the collets and arbors that are used in the main spindle. The front end of the spindle is threaded to receive a chuck. A piece 8 inches diameter and 14 inches in length can be swung between the spiral head and the footstock. An important addition to this machine is obtained by the applica-

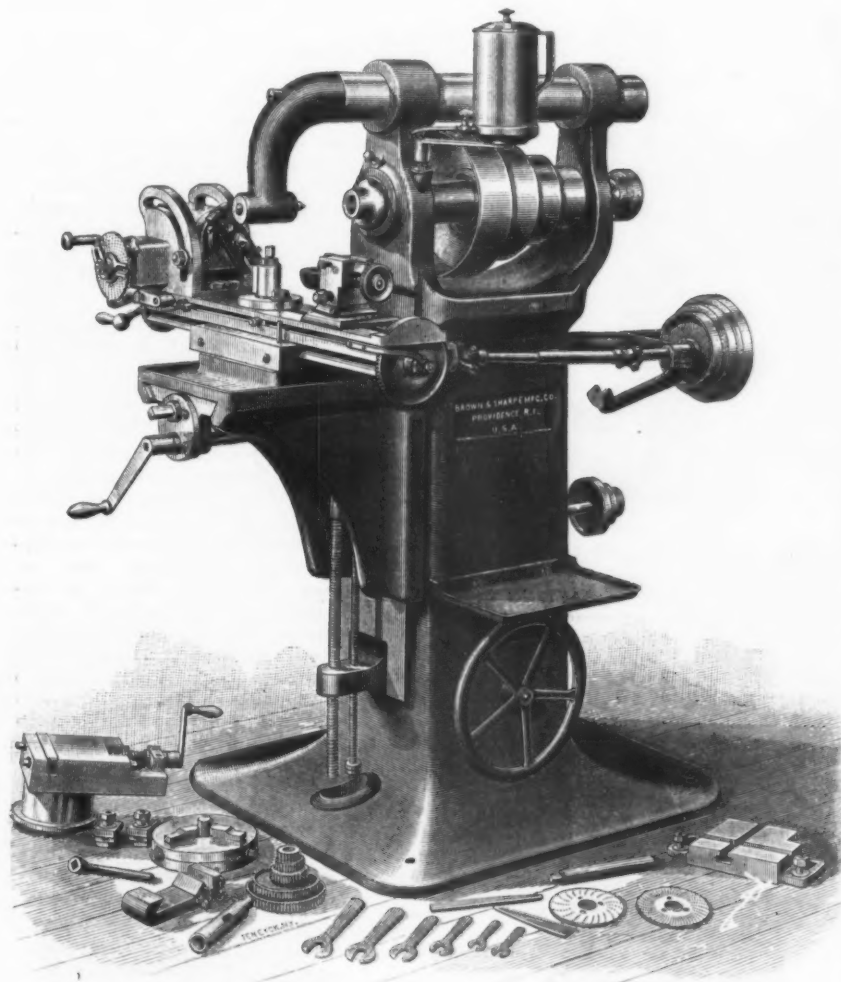
are now carefully lined and the clay packed tightly around them. When in line the centers are removed, one after another, and the clay cut out crosswise in the middle of each box. The center is then replaced and the hollow space filled by pouring in babbit. The center and remaining clay are then removed and upon the ribs of babbit (in the middle of each box) is placed the shaft, which is now accurately in line. Finally the space left is filled with babbit. In this way the shaft can be quickly and accurately lined; the bearings will be absolutely true and the lining from $\frac{1}{4}$ to $\frac{1}{2}$ inch thicker than the ordinary $\frac{1}{4}$ -inch lining, consequently the shaft itself will last longer.

Electrical Exhibit at Chicago.

An electrical convention was held at the Exposition Building in Chicago this week, beginning on Tuesday and ending to-day, under the auspices of the National Electric Light Association. Much interest has been manifested by manufacturers all over the country, and the exhibition is said to have been the largest and most interesting ever seen at a convention of this kind. One of the most interesting features was an electric street railroad, 800 feet in length, laid in the main hall, by the Thomson-Houston Company. Great progress has been made in this direction during the past two years, and the fact that one company has built within that time 23 roads, all of which are in successful operation to-day, demonstrates beyond doubt that the experimental period has been passed so far as electric street railways are concerned. The Directors of the Exposition Company have manifested a lively interest in the exhibit features and offered every facility to make the convention a complete success. They are desirous of having at an early day, possibly this year, an exhibit that will completely fill the great building and will include everything electrical. They have in mind the railway exhibit of 1880, and intend surpassing it in point of interest and variety. Such an exhibit would be of great benefit to Chicago, as it would be international in scope, and therefore would excite interest the world over; as a drawing attraction it would doubtless pay for the expense incurred, as there is something mesmeric in the very word "electric."

The cruiser Petrel, building at the Columbia Iron Works, in Baltimore, will soon be ready for the official test of speed. While the contract demands that the Petrel shall develop 1100 horse-power she promises to develop not short of 1300 units of horse-power. This would mean \$20,000 additional to the Columbia Iron Works. The hull, machinery and fittings have all been constructed at the Columbia Iron Works, but the steel plates are the manufacture of the Carnegie Works, of Pittsburgh. The engines of the Petrel are compound, there being two cylinders of 25 and 46 inches in diameter respectively. The length of the Petrel is 175 feet, her extreme breadth 31 feet, depth of hold amidships 15 feet 7 inches. Her tonnage is 870. The Petrel is just about half the tonnage of the Yorktown, but her main battery is only two guns less. The Petrel is so far the smallest of the war vessels building for the new navy, but she is expected to rank among the most efficient of the fighting gunboat cruisers. The contract price is \$280,000.

In view of the interest now taken in pneumatic guns for the projection of dynamite, it is to be noted that the first tube used for that purpose was furnished from the Chicago warehouse of the National Tube Works Company. If the guns could be finished as fast as the tubes could be furnished it would require a very short time to equip the seaboard cities with these new weapons of defense.



NO. 1 UNIVERSAL MILLING MACHINE, BUILT BY THE BROWN & SHARPE MFG. COMPANY, OF PROVIDENCE, R. I.

with the feed-screw that a positive rotary movement may be given to the work. The wear of the main spindle is taken up by longitudinal movement and the end thrust is taken by a collar. The knee can be moved vertically 15 inches, and the saddle holding the spiral bed can be moved 6 inches in a direction parallel with the axis of the main spindle. The table is 28 inches long by 5 inches wide, and has an automatic feed of 17 inches. A series of graduations shows in degrees the angle to the axis of the spindle at which the table is fed, and index dials show the vertical and horizontal movements of the knee in thousandths of an inch. The spiral head has indexing mechanism by which the periphery of a piece of work may be divided into equal parts, and the velocity of the rotary movement of its spindle, or of the work, relative to the speed of the feed screw, is regulated by change gears at the end of the bed. Any spiral of the

tion of an overhanging arm for supporting the outer end of the arbor carrying the cutter. The form of this arm is plainly shown in the illustration.

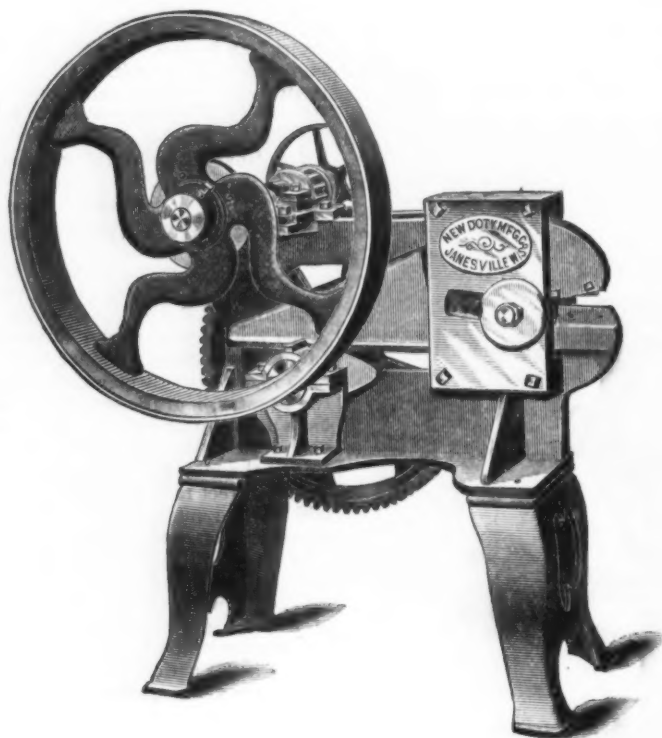
Lining a Long Shaft.—In an elaborate description by H. O. Hofman, of the Dakota School of Mines, on gold milling in the Black Hills, we take the following report of a method of lining shafts which originated with Mr. R. Graham, the millwright of the Homestake Company, and which has proved to be quick and effective. When a shaft is to be lined, the boxes are placed so as to be approximately in line. The lower bearing, which is to receive the shaft, is loosely packed with clay and a wooden center pressed into it. This consists of a semi-cylindrical piece of dry wood having the same diameter as the shaft and about the length of the box. The wooden centers of two or more boxes

New Style Shearing Machine.

The new style of shear here illustrated is especially adapted for cutting either round or flat bar iron. The machine consists essentially of a shear lever moved by a cam on a shaft passing through under the

this—that the same number of rupees would no longer exchange for the same amount of gold as formerly, but would exchange for, or, in other words, would buy as much of any commodity or commodities in India as they ever bought before. What was the relative position of the Eng-

country. He was enabled by this fall in the exchange to take the lower price of £1 10/ per quarter instead of £2 without any loss whatever to himself; in this way he was enabled to undersell them and his rivals in all other parts of the world, and not unnaturally he depressed the market price of wheat in England and the gold-using countries of the world.



SHEARING MACHINE, BUILT BY THE NEW DOTY MFG. COMPANY OF JANESVILLE, WIS.

lever, the shaft being driven by gears from a second shaft carrying the balance-wheel and driving pulley. The knives for cutting round and flat iron are on opposite sides of the king bolt, and both are always in place ready for use. The shears for round knives are made the reverse of the iron, thereby preventing the flattening of the bar in cutting; they leave a round end on the iron. The machine is back-geared ten to one, and all the parts are made strong enough to resist the greatest strain which can be brought upon them. These machines are made by the New Doty Mfg. Company, of Janesville, Wis., in six sizes, the smallest of which weighs 600 pounds, and is capable of cutting 1-inch round iron or 3 x 1/2 flat iron; the largest machine weighs 10,000 pounds, and will cut 3-inch round or 6 x 2 inch flat iron.

Silver and Wheat.

The English controversy as to the effect of the fall in silver upon the relations of British and Indian wheat growers is revived at this time by a speech of Mr. Chaplin at Abingdon, in which he puts in very clear and concise form the reasoning that the decline in the gold price of the rupee had operated as a protection to wheat growers of India. Mr. Chaplin's remarks on that point were thus reported:

The rupee in India, which was formerly worth 2/, had now, as a matter of fact, fallen in value to very nearly 1/4d, and the fall had led to all the differences of exchange by which their interests were so seriously affected in the wheat-growing industry. However much the rupee of India had fallen in value in relation to gold, in relation to wheat and other commodities in India it had not fallen at all. In other words, what had happened was

lish and the Indian grower at the present time? Under the influence of exchange the Indian grower was realizing just the same amount as he ever realized before, while the English grower, on the other hand,



Fig. 1.

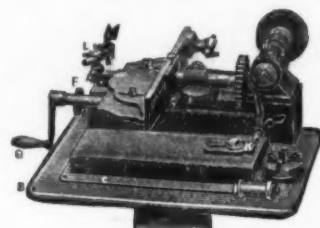


Fig. 2.

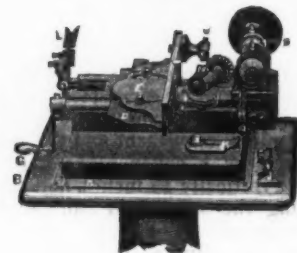


Fig. 3.

THE "CHALLENGE" UNIVERSAL CUTTER, REAMER AND FACE GRINDER

was getting less by half a sovereign on every single quarter that he sold. It must be obvious, therefore, that the Indian grower was cultivating wheat at the present time under an enormous advantage as compared with his competitor in this

tween centers, 15 inches, and traverse or cut, 12 inches; face or side cutters up to 8 inches in diameter can be ground.

This machine is made by the Diebel Sewing Machine and Trimmer Mfg. Company, of Philadelphia, Pa.

THE WEEK.

A heavy tumble in ocean freights has led to a cut in rates on dry goods between the White Star and the Inman lines. The movement was precipitated by the introduction of two cheap-running steamers of large capacity, expressly built for the trade, and under the sharp competition thus arising it is probable that other lines will become involved, and the cut extend to various classes of merchandise. The tendency must be to stimulate a foreign trade that of late has assumed a magnitude beyond all precedent.

Work on the Panama Canal, where 6000 laborers were employed, was stopped on Friday. The Government of Chili offers free transportation to all competent men to engage in railway building under contracts recently concluded with American engineers. There were not many American workmen, but the American Dredging and Contracting Company, which employed most of them, had about 500, whose expenses for transportation homeward will probably be met by an appropriation from the Treasury at Washington.

One-half of the window-glass now used in this country is manufactured in Belgium, and as the importers could not be induced to join in the proposed window-glass trust, the whole scheme is said to have fallen through. There are 1305 pots in the country, and of these 1157 are in operation and 148 are idle. In the Pittsburgh district there is not an idle pot, and 350 are in operation.

The New York Building Bureau reports that the applications for the construction of new buildings the coming spring are much more numerous than usual at this season of the year, and that prospects are more favorable than ever before. The Rouso storehouse, to be erected at 549 and 551 Broadway, will be one of the largest and most extensive in the city. It will have a frontage of 73 feet and a granite and iron front, ten stories high.

Despite the opposition in Congress to the employment of steam printing machines in the Bureau of Engraving, the committees who have had the subject under consideration report adversely to the advocates of hand presses. Steam press-work, it is affirmed, fulfills the highest requirements.

Remarking upon the Senate's substitute for the Mills bill so far as concerns the single item of tin plate, Senator Aldrich said, the duty now collected with the tariff at 1 cent a pound is \$6,000,000 in round numbers. At the rate of duty proposed in the bill, to take effect July 1, 1890, 2.15 cents a pound, the revenue would be \$12,900,000. Unless he was greatly mistaken in the matter of tin plate, we shall be manufacturing nine-tenths of all we use a year after the new tariff goes into effect.

The deplorable condition of the New York State prisons, under the operation of the ill-advised legislation of last summer, received the attention of the Union League Club at its last session, Chauncey M. Depew in the chair, and resolutions were passed in favor of "adequate and liberal provision for the employment of persons confined in the penal institutions of the State in such productive labor as is adapted to the situation in which they are placed." A very decided reaction on this subject has taken place throughout the State.

Encouraged by the success of the technical school in Hoboken, the Industrial Education Association, of New Jersey, are endeavoring to establish training schools throughout the State. Among those in-

terested in the work are: Prof. Charles H. Ham, of the Chicago Manual Training School; Dr. Nicholas M. Butler, president of the Industrial College of New York; the Rev. George C. Houghton, president of the New Jersey College of Manual Training; Charles W. Fuller, State Superintendent of New Jersey, and Wayne Parker, of Newark.

American trade-marks and labels are extensively imitated in Brazil, with the object of introducing inferior goods. The penalty is evaded by a skillful use of the Spanish and French languages.

The estimates of national expenditure in the Dominion for the coming year make a total of \$35,400,000, as against \$36,739,000 last year, \$12,000,000 being interest on the public debt.

Even in its present unfinished condition, the new Capitol at Albany is by far the most costly building of modern times. The original plan of the Legislature was to expend \$4,000,000 in its construction, and with that understanding the corner stone was laid 18 years ago, in 1871. But before it had advanced to its second story it had already cost \$8,000,000, and since then the amount has been increased to \$18,000,000. The Capitol at Washington, from the laying of its corner stone in 1793 up to 1878, had cost only \$13,000,000, including all expenses of repairs, alterations and furnishing during the 85 years. The Patent Office has cost nearly as much, but it has been burned down and rebuilt. The Treasury, of a more expensive design than the Capitol, has cost \$7,000,000. The Palace of Justice at Brussels, described as "the architectural wonder of the century," has been finished at a cost of \$10,000,000.

The port of Cleveland, Ohio, famous for its shipments of iron ore, rejoices in the prospect of having the best ore docks on the lakes, the sum of \$800,000 being now available for modern machinery and other improvements.

The British steamship Chancellor, at Charleston, has made two attempts to load cotton for export, and in each instance the cargo took fire spontaneously, making it necessary to scuttle the ship.

A St. Louis company contemplate running a line of light draft steamers direct between that port and Central America, and 150,000 shares of the stock have been subscribed for by merchants in Venezuela.

There was shipped from Pittsburgh last week 180,000 feet of underground cable for electrical purposes, consigned to parties in Rio Janeiro, Brazil. This is the largest order yet received from a South American port.

President Stevens, of the National Builders' Association, in his address before the convention in Philadelphia, took strong ground in favor of the establishment of trade schools. "As regards the views expressed by the National Association on the apprenticeship system, at its first convention at Chicago, and again at Cincinnati, last year," he remarked, "they seem to have taken hold of the public and been adopted by them. The press of the country has, in many leading editorials, discussed the subject, and is busy molding public opinion. Already steps have been taken that look toward the early establishment of trade schools, and some of our public spirited citizens are devoting their means in support of such enterprises. Notably among these I may be permitted to name Col. R. T. Auchmuty, who, not satisfied with the good accomplished by his New York trade schools, which were established and are supported by him, has offered to the Builders' Exchanges of Boston and Philadelphia a very large sum of money toward the establishment of such

trade schools under the auspices of the exchanges in those cities." No mechanic, the speaker said, should look upon trade schools as a menace to his interests.

The Western packers of canned goods have 83 factories in their association, who are co-defendants in a suit for an infringement of a soldering patent.

Baltimore aspires to build up a grain export trade at that port of a permanent character, and to hold the leading position among all rivals. Since January 1 Baltimore has exported nearly 5,000,000 bushels of corn, and 194,000 barrels of flour while the movement from other ports has been comparatively insignificant. Merchants in Baltimore are now discussing the feasibility of establishing a line of steamers to Brazil, taking out cargoes of flour, grain and provisions and returning with coffee, hides and other South American products. They would doubtless expect to absorb a considerable share of the coffee trade now done in New York, in the same way that St. Louis is endeavoring to divert to Western centers the coffee trade between New York and Central American ports, which for a number of years has rapidly grown in importance. The trunk line railroad companies feel much disturbed by the tendency of the grain trade to take a new route, at least during the close of navigation.

A powerful statement in support of the gold standard was made by Herr Bamberger in the German Reichstag, a few days ago. He held that the present prosperity of Germany was greatly due to the abandonment of bi-metallism, and showed that the country held gold stock, including the bullion in the Reichsbank and private banks and the war treasure in the fortress at Spandau, amounting to 800,000,000 marks, the Reichsbank alone holding 400,000,000. Business, especially finance, was booming, he said, and all countries were coming to Germany for loans. His arguments failed to impress the majority in favor of bi-metallism, and it is determined to push the question to a division of the House.

A well-known expert, who recently visited Utah in the interest of Eastern capitalists, reports that fully 700,000 tons of asphalt now lie deposited in one of the plains near Vernal, and is available for commercial purposes. Ex-Senator Tabor, of Colorado, is interested in the company about to develop the field.

A company headed by ex-Governor Abbott, of New Jersey, is said to have purchased 2000 acres of land near Muncie, Ind., with the design of developing the natural gas advantages of that region.

Apropos of the recommendations of the National Builders' Association, at Philadelphia, in respect of manual schools, President Sheppard, of the Board of Education in that city, says: "The introduction of machinery into all branches of manufacture has changed the whole industrial world. The apprenticeship system of the past generation has become obsolete, and nothing beyond temporary expedient has yet taken its place. Industrial training in connection with our public school system appears to afford the only practicable way of solving the problem thus presented." Philadelphia, President Sheppard says, will need five or six manual training schools in a few years to meet the requirements of the people.

More "boodle" was discovered in the method of leasing the new butcher stands in West Washington Market. A Jerseyman testified that he paid \$500 bonus to an *attaché* of the Finance Department in the City Hall, whereupon the alleged offender was promptly suspended from duty by the

City Comptroller, and the practice thus disclosed was brought to the attention of the District Attorney.

Several propositions for lines of electric street cars are before the Massachusetts Legislature for the sanction of that body.

The new British Minister to Washington, it is said, will be S. Spencer St. John, now Minister to Mexico.

The New England Water Works Association dined last week at the factory of the Chadwick Lead Company, in Boston, and interesting papers were read, as follows: "The Quincy Dam," by L. A. Taylor, of Boston; "A Few Notes on Erosion and Its Effect on the Pacific Coast," by Solon M. Allis; "Experience with a Sand-blast," by John L. Harrington and Phineas Ball; "How We Painted Our Stand-pipe," by J. E. Beals, of Middleboro; "How We Placed the Working Beam in the Steamer Puritan," by W. W. Hawes, of Fall River, and "An Experience with a Water Meter," by H. G. Holden, of Nashua.

Minister Preston, of Hayti, suspecting that the steamer Carondelet, at this port, was loaded with 6000 Remington rifles, powder, &c., consigned to the Dominican Consul at Samana, convenient to the headquarters of Gen. Hypolite, the steamer was intercepted by a revenue cutter.

The Mallory Steamship Line, from New York to Galveston, with extensive connections to all points in Mexico, California, Colorado, &c., has contracted for the eleventh iron steamship to be added to the fleet.

Carroll D. Wright was confirmed last week by the United States Senate to be Commissioner of Labor.

A 14-story office building in Chicago, a Gothic structure near completion known as the Owings Building, suddenly fell into ruins last Sunday. The interior was entirely of tile, supported by iron girders. The flooring in the tenth story had shown some defect, owing to the natural settling of the building, and is believed to have fallen, taking in its course the floors below, in a fearful series of concussions. The exterior walls remain undisturbed, giving no indication of the wreck within. The architects are Cobb & Frost, who have the contract to plan the great Newberry Library in Chicago, for which several million dollars have been bequeathed. F. R. Owings, a Boston capitalist, is the owner.

The commission appointed by the Governor of Pennsylvania to devise a plan for introducing manual training into the public schools of that State recommend in their bill prepared for the Legislature the appointment of special instructors who shall have tools and machinery, but it is designed that in time the ordinary instructors shall add the teaching of the manual branches to their present accomplishments. They do not provide for teaching the trades.

The substantial progress in naval construction during the last few years elicited from Senators not identified with the present Administration words of commendation. Mr. Plumb in the course of a debate last week relating to the new cruisers said "he was glad to say (in the closing days of the administration) that the Navy Department had been well administered, not only in the sense that there had been a stimulus given (so far as could be given by executive direction) to everything that went to the up-building of the navy, to procuring the best types of ships, to the stimulation of the highest forms of manufactures, but, more than all that, to the encouragement of the individual genius of the people, and to the doing of the work, not in navy yards (where political

considerations might have influence), but in private yards. He was glad to say that during the past four years the Navy Department had been administered in a practical, level-headed, judicious way. The result was that (quoting a remark made to him by Mr. Hale) he was prepared to believe within ten years the United States would have the best navy in the world—not the strongest navy, not a navy with the most ships, not a navy with the greatest variety of ships—but a navy with the most modern ships, with ships best adapted to the work they would have to do."

Mayor Grant procured the passage of a resolution by the Electric Board of Control that hereafter telegraph trunk lines shall be carried only through the city in subways.

The Central Labor Union in this city, after a boisterous meeting last Sunday, was purged by the withdrawal of the Socialist element, representing several thousand members, mostly Germans. The divisions now are hostile camps, essentially differing in spirit, practice and aims. The interests of labor, it is hoped, as well as the observance of law and order, will be promoted by separate organizations.

The claim of Chas. E. Emery for \$10,000 for services as consulting engineer in 1887 was the cause of a lively meeting of the Brooklyn Bridge trustees on Monday.

The annual report of Commissioner Hotchkiss, of the Connecticut State Labor Bureau, makes some interesting comparisons between the wages paid laboring men in 1860 and 1888, and the cost of the necessities of life in these two years. It shows an average advance in 28 years in the wages of males of 43 per cent., and in the wages of females of 57 per cent. During the same time the increase in the cost of groceries and provisions has been only 10½ per cent., while staple dry goods show an average reduction of 39 per cent.

Capt. F. M. Ramsay succeeds Rear-Admiral Gherardi as commandant at the Brooklyn Navy Yard.

The United States Consul at Rio Grande do Sul reports upon the condition and prospects of trade in Southern Brazil. Most of the vessels crossing the bar go as far as Pelotas and many as far as Porto Alegre, which is the terminus of a railroad penetrating the center of a large German colony at New Hamburg, 26 miles distant. The steamers of 11 different lines, of from 10 to 80 tons burden, leave its docks regularly for all accessible points up to different rivers. Porto Alegre has 44,000 inhabitants, of whom 14,000 are Germans. The chief American goods sold there are kerosene oil, flour, Collin's axes and some stoves for cooking purposes. The whole country is filling up with emigrants from Europe, and will prove of great value to those who have established a trade.

A decision in England by the Lord High Justices of the Court of Appeals gives Edison an absolute monopoly of the incandescent light in that country by upholding his patent. Practically the same points are before the courts in the United States.

M. de Lesseps rejected an offer by the Credit Foncier to advance \$400,000 a month for six months in aid of the completion of the Panama Canal upon the security afforded by the old company's assets. The governor of the institution, M. Christophle, made it one of the conditions that he should act as chairman of the new organization and select two-thirds of the directors. These terms being rejected, it remains to be seen whether any other feasible plan for completing the work can be devised.

MANUFACTURING.

Iron and Steel.

We are informed that the report that the Stewart Iron Company, Limited, of Sharon, Pa., had recently purchased 14 acres of land with a view of enlarging their plant is not altogether true. It is correct that a purchase was made, but it was for the purpose of affording additional storage room. At present the company have no intentions of enlarging their plant.

Emma Furnace, of the Union Rolling Mill Company, Cleveland, Ohio, has been blown out for extensive repairs. The company have a sufficient amount of pig iron on hand to supply their trade until such time as the furnace has resumed blast again.

The No. 2 mill of the Washburn & Moen Mfg. Company, at Worcester, Mass., was badly damaged by fire on Friday night. The mill was used for drawing copper wire and making bale tie wire. The building is 175 x 50 feet and four stories high, with a full basement. The fire broke out in the third story, and burned up into the upper story, destroying the roof, badly gutting the floor below, and considerably damaging the third floor. The entire building was deluged with water. The loss will be in the vicinity of \$30,000, which is covered by insurance.

On Friday, the 15th inst., the employees of the Pottsville Iron and Steel Company's Fishback Rolling Mill were notified of a reduction from 10 to 15 per cent. in wages, to take effect on the 18th inst. The reduction affects about 700 men. It is thought it will be accepted by the men without trouble.

On Friday, the 15th inst., notices were posted on the nail factory of the E. & G. Brooke Iron Company, Limited, at Birdsboro, Pa., asking the 300 employees of the works to accept a reduction in wages to take effect on March 1. The firm recently reduced the wages of their puddlers from \$3.25 to \$3 per ton.

A reduction in the wages of all men employed in the pipe and rolling mills of the Reading Iron Works, at Reading, Pa., has been announced to take effect on Monday, the 25th inst. Common labor is reduced from \$1.15 and \$1.20 per day to \$1, and the wages of all other employees are lowered 10 per cent.

From the South Cleveland (Ohio) *Advocate* of the 11th inst. we take the following: "A conference of the Cleveland Rolling Mill Company's rail-mill employees was held with Superintendent John Walker, last Saturday afternoon. Finally a proposition was made to start the rail mill single turn, the old blooming mill double turn—one turn on rail blooms and the other on billets, providing those making good wages would accept a reasonable reduction. The men working for small wages it was not expected could work for less. The men considered the company's proposition, and, as it was made in good faith to help all concerned, they accepted it. This arrangement will keep the Bessemer steel works running full, employing 325 hands."

H. K. Porter & Co., Limited, of Pittsburgh, builders of light locomotives, made the second annual distribution of a percentage of the profits among their employees last week, and quite a large sum was given to the men.

The St. Louis Ore and Steel Company have been filling the stock houses of their furnaces for two or three weeks, and expect to blow in "C" furnace in about a week. The re-starting of the steel

works depends upon whether the steel rail market improves.—*Age of Steel, St. Louis.*

No. 3 Furnace, of the Pottsville Iron and Steel Company, at Pottsville, Pa., has been blown out owing to the dullness in the iron trade.

A press dispatch from Steubenville, Ohio, under recent date says: "The Jefferson Coal and Iron Company, of Steubenville, have obtained judgment by default against the Cartwright Iron and Steel Company for \$4166, and will immediately commence suit against the stockholders, a large number of whom live in Youngstown, Ohio, upon their statutory liability."

The steel department of the Bellaire Nail Works, at Bellaire, Ohio, is making its regular output under the direct process, the whole product of the blast furnace going direct to the converters.

Some time since announcement was made in these columns that Jones & Laughlins, Limited, proprietors of the American Iron and Steel Works, at Pittsburgh, had decided to pipe natural gas from their own wells, located in Jefferson Township, Washington County, Pa. The firm have completed this undertaking, and are now independent of the local gas companies. The main is 16 and 12 inches, and the firm has three wells of 500 pounds pressure, ample supply for the large needs of the establishment.

P. Minturn Smith, long connected with the Phoenix Iron Company, in this city, has recently assumed the presidency of the Union Iron Works, of Greenpoint, L. I., manufacturers of structural iron-work of all kinds. The offices of the company are in the Aldrich Court Building, 45 Broadway.

Irondale Furnace, at Irondale, W. T., has now been running for some time. A report by A. B. Ropes, engineer of tests of the Southern Pacific Railroad, who use the iron largely for car-wheels, shows the following analysis of No. 3 iron:

Total carbon.....	3.51
Silicon.....	0.721
Phosphorus.....	0.339
Manganese.....	0.130
Sulphur.....	0.019

Mr. Ropes adds: This iron contains much less silicon, phosphorus and manganese than the English brands, and there are no signs of vanadic acid, which was found in all the English irons and weighed with the silicon.

Machinery.

In our last issue a mistake crept into the description of the Nash gas engine, built by the National Meter Company, of New York. We stated that the floor space occupied by the 2 horse-power engine illustrated measured 25 x 85 inches. This should have been 25 x 35. We cheerfully remedy the error, as far as lies in our power, and especially as the engine is small and compact, considering the power developed.

On Monday, the 11th inst., a charter was issued to the Electric Hydraulic Company, of Pittsburgh. The incorporators are J. P. Witherow, R. F. McFeely, H. F. Floy, M. H. Herron and F. J. Edmundson. The capital is \$10,000, divided into 400 shares. It is for the manufacture of electric and hydraulic machinery.

A foundry is projected at East Chicago, Ind., for the manufacture of chilled rolls and other heavy castings and special work not hitherto attempted in that section of the country. A new process will be used in the construction of large rolls, which, it is claimed, will greatly reduce their cost without impairing their strength or durability. The rolls will be cast hollow, and a core of silica will be inserted, which is

expected to form a center of the necessary solidity. The promoters of the works claim that they have thoroughly tested their process and have demonstrated its practicability, while as to its economy there is no doubt. Plans for the foundry building are now in hand.

The Lloyd Booth Company, proprietors of the Falcon Foundry and Machine Works, at Youngstown, Ohio, since adding a roll turning department to their foundry have been prepared to turn out a complete rolling mill outfit, and have now under way an 18-inch mill, which is nearly completed. They have also under way one of their modern designs of squeezers for a plant in Tennessee. With their air furnace they are prepared to furnish their customers with refined iron and steel mixed castings. They have had a good trade in their extra heavy axle and rail shears, weighing 24 tons, having sold three within the past six months.

A. W. S. Smith, of West Oakland, Cal., would like to purchase a machine for the manufacture of excelsior.

Contracts have been awarded as follows by the Secretary of the Navy for furnishing machines and tools for the Mare Island Navy Yard, California: Joseph J. White, Philadelphia, drilling machines, \$875; Universal Radial Drill Company, Cincinnati, counter sinking machines, \$680; George Place, New York, one 250 horse-power engine, \$16,800; Detrick & Harvey, Baltimore, planing machines, \$3520; Bement, Miles & Co., Philadelphia, planing, punching, straightening, bending, countersinking and drilling machines, \$16,020; Niles Tool Works, Hamilton, Ohio, punching, shearing, bending and straightening machines, \$48,593; James W. Soper, New York, Crane foundry rattler, 100 ratchet drills, \$2390, and the Builders' Iron Foundry, Providence, R. I., hydraulic accumulator, \$2700.

The Westinghouse Air Brake Company, through their superintendent, T. W. Welsh, have placed an order with Manning, Maxwell & Moore, of New York, for 214 21-inch lathes for the new shops now being constructed. This is probably the largest order ever placed for this class of machine tools. Manning, Maxwell & Moore naturally feel gratified at the successful result of their competition, not only on account of the size of the order, but also because their tools met the very exacting requirements of the Westinghouse people and were accepted entirely on their merits.

The National Pipe Bending Company, of New Haven, Conn., report that during January they sold over 40 National heaters, aggregating over 4000 horse-power. A large number of these were for electric light plants, including three heaters of 500 horse-power each and seven from 100 to 200 horse-power. They also report the sale of a large number of coils and bends of iron, brass and copper pipe; three of these coils of 1½-inch iron pipe contained 1000 feet of pipe each.

T. R. Palmer, assignee of the St. Paul Iron Company, of St. Paul, Minn., announces that bids will be received by him up to March 1 for the property of the concern, consisting of manufactured and partly manufactured goods, foundry tools and equipment, machinery and real estate.

Hardware.

The Cuyahoga Mfg. Company have been organized at Cleveland, Ohio, for the manufacture of burglar alarm knobs and window alarms. The office of the company is located at No. 61 Grand Arcade Building, in the above-named city.

J. H. Day & Co., Cincinnati, Ohio, had their factory damaged by fire, 12th inst., the loss being estimated at \$4000, which is fully covered by insurance. Their stock-

room, however, was but little damaged, and they state that they have enough of their regular machines and other goods of their manufacture to fill orders until they get their factory in operation again, which they expect will not be over 10 days.

Coleman Hardware Company, Chicago, Ill., report a large demand for their J. G. C. spring hinges, which has compelled them to largely increase the force manufacturing them.

Nes Chain Mfg. Company, York, Pa., announce that they have erected a plant for the manufacture of all kinds of Iron Chain and start operations at once, intimating that they will be ready to supply promptly all orders for shipment March 1 and later. Chas. A. Nes, the managing partner, was connected with John C. Schmidt & Co., and his brother, David S. Nes, is the other member of the firm. Chas. P. Leeper, formerly superintendent of York Chain Works, is superintendent. They issue a price list showing the extensive variety of chains which they are manufacturing.

A new company, known as the Harrisburg Rolling Mill Company, have taken the Lochiel Mills at Harrisburg, Pa., and are putting them into shape for immediate starting up. Among other improvements they have ordered a plant of Ridgway Balanced Cranes, by which they will load the entire product of all the mills with only one man.

The plans of the Passaic Rolling Mill Company, at Paterson, N. J., have grown in magnitude. Besides the open-hearth plant alluded to, the company will build a new blooming mill, and will move its beam train. The new mill completed last year is making universal mill plates. The same engine, of 2500 horse-power, drives also a two-high beam train, the only two-high train in this country. This train is not yet completed. It will make up to 20-inch steel beams.

Ramie culture is being introduced into Lafayette Parish, La., and large decorticators have been erected. Successful experiments prove that ramie can be grown at about the same cost as cotton. A New York firm offers 4 cents a pound for all the fiber that can be grown. Experiments having similar objects are being made in Florida by D. P. Burden, formerly of New Jersey, who is cultivating the Spanish maguery plant, and has recently exhibited some very white and strong fibers. Experiments at Sanford show that after the first year the maguery plants yield 60 tons of leaves per acre every year. From this amount 12 tons of marketable fiber may be obtained. Mr. Burden's estimates of cost and value show large profits to farmer and manufacturer. The most important part of his work, however, appears to be that he has invented a machine for cheaply and effectively extracting the fibers from a large class of Florida plants producing fibers in pulp as distinguished from bark fibers. Wm. D. Kelley, of Pennsylvania, has taken a warm interest in the development of this industry, in hopes of providing an American substitute for manila hemp.

The Government Ordnance Foundry at the old Washington Navy Yard has been turning out some excellent work. The six 6-inch guns for the battery of the cruiser Charleston have been finished and will be tested. They are savage looking appliances of modern war. They will be mounted at once after the test and the vessel will be put in commission without waiting for her two 8-inch guns.

The Iron Age

New York, Thursday, February 21, 1889.

DAVID WILLIAMS, - - - PUBLISHER AND PROPRIETOR.
CHAS. KIRCHHOFF, JR., - EDITOR.
GEO. W. COPE, - - - ASSOCIATE EDITOR, CHICAGO.
RICHARD R. WILLIAMS, - - - HARDWARE EDITOR.
JOHN S. KING, - - - BUSINESS MANAGER.

Trusts and Legislatures.

It is becoming more and more evident that a large number of our citizens are not disposed to agree with those, among whom Andrew Carnegie is a conspicuous example, who advocate a *laissez faire* policy in regard to trusts. It may be true that these organizations carry in their inception the germs of a disease which must ultimately lead to their dissolution. It may be true that the consumer will be ultimately avenged by the break-down which must follow the flow of capital into channels made artificially tempting. In isolated cases great manufacturers like Andrew Carnegie may realize that a wise, far-seeing business policy dictates opposition to fusion of interests in the form of a trust, yet the number who hold this view seems likely to decline, for one reason. We believe that organization in manufacturing tends in a direction which will lessen the influence of individuals. The number of firms and families who control large operations is diminishing, while there is a steady increase in corporations with scattered and temporary ownership. Capital is becoming more and more mobile. Family traditions and personal knowledge do not have as much weight in determining investments in enterprises as they did. Many capitalists do not go into manufacturing corporations with the object of staying in the business all their lives. They invest with the object of selling out at a profit as soon as possible. With the growth of this spirit the opportunity for "getting out," on the part of directors, managers and stockholders, through the aid of large temporary profits under trust *regime*, is much improved. The desire to form trusts grows, the resistance to them by manufacturers themselves decreases. We think, therefore, that there is some justification for the alarm shown by consumers, and it is a poor consolation to tell them that though they may be subject to extortion for a while their time is bound to come. The promise of future compensatory benefits does not mitigate a keen sense of present grievance. The danger is that the irritation and uneasiness created by real or fancied wrongs may lead to harsh and radical measures.

We must look the facts in the face. It is certain that the question of dealing with this new form of aggregated capital is profoundly agitating the public. It is being discussed by thoughtful and earnest students of our economic system, and is being seized upon by selfish demagogues to advance their own schemes. Bills are being brought before our State legislatures in rapid succession. On the same day measures were proposed in the Minnesota Legislature and in the Pennsylvania Senate. In Kansas an act was passed leveled against an alleged combination in beef and pork, and a similar measure has been lately dis-

cussed in Illinois. In New York the agitation was begun some time since, and in Ohio a committee appointed by the General Assembly to investigate trusts has just made a sharp report. In the United States Senate, Mr. Reagan has lately proposed a characteristically sweeping measure. The newspapers throughout the country teem with condemnatory articles, and often sensational reports of oppression and extortion. Let it be conceded that much of what is written and said is very crude and often absurd. Let it be granted that the facts are distorted until it seems a hopeless undertaking to place them in their true light. Yet a deep impression is being made, and any organization which can be possibly classified as a trust in the widest interpretation of the word is held up to public odium and enmity. The movement is undoubtedly gaining both in volume and in strength.

Some of the measures proposed are very harsh. The following summary of the provisions of the bill introduced in the Minnesota Legislature may serve as an example:

The first section makes it unlawful to enter into or maintain any combination or agreement to prevent or restrict the production of any article of commerce or to regulate or control its market price.

The next section makes it unlawful to make or carry out any agreement to produce any article of commerce below a common standard or figure; or to in any way interfere with free and unrestricted competition in the sale of such article; or to pool or combine in such a way as to affect its price. The third section is like the first two. It seeks to prevent indirect combinations through trusts, trustees or other fiduciary agents. The fourth section makes any contract in violation of these sections void in law and equity.

The fifth section goes further and gives the purchaser of any article whose price is affected by trusts the right to plead the act as a defense for not paying for the article. The sixth section declares any officer or agent violating the act guilty of felony, punishable by a \$5000 fine or a two-year imprisonment, or both. Under section 7 a corporation which violates the act forfeits its corporate rights and franchises, and the Attorney-General of his own motion must institute an action for the dissolution of its corporate existence.

Section 8 seeks to prevent corporations which have violated the act from doing business or maintaining suits in the State, and any officer who transacts business, knowing the corporation to have violated the law, is to be guilty of felony. The last section permits associations of laboring men to take action regulating wages, and none of their rights or privileges is to be forfeited under the act.

Bills so sweeping in their provisions are not likely to become laws, and if they do, cannot remain long on the statute books. It is the spirit that makes even their presentment possible which must be dealt with. It is characteristic of much of what is written and said that condemnation does not stop at the trusts proper, but includes trade associations and combinations of all kinds. We have insisted repeatedly that a sharp distinction must be made, and we are pleased, therefore, to find in at least one case that the matter is viewed in this light. The report of the Ohio committee contains the following:

The most common form of combination is the simple agreement, verbal or written, to fix and maintain prices at a certain point. While this form of combination works injustice to consumers by unjustly advancing prices, it is short lived, and because of advantage gained by some members over others the agreement is soon broken. The next form, an agreement on prices the violation of which is enforced by

fines or forfeiture of money deposited, is stronger, but in both of these forms of combinations the principle of self-interest remains, and by reason of the fact that some one of such combination is sure to reap a greater advantage than another, such combinations have within themselves the elements of destruction, and it was this fact which led up to that form of combination called the "trust," in which all the elements of self-interest are eliminated, and each member of the combination, in proportion to his share, receives his proportion of the benefits.

We believe that while it may be just to condemn trusts, it does not follow that severe restrictive measures should be passed against ordinary trade combinations. However much opinions may differ in regard to their efficacy, it is certain that at times they are beneficial temporarily to the producer, and protect the consumer against the incidental dangers which are only too often the outgrowth of cut-throat competition.

The Pig Iron Warrant Scheme.

We print elsewhere the second part of the correspondence relating to the plan of establishing a system of American pig iron warrants, the first part of which was published in *The Iron Age* of February 14th. We appreciate the fact that, being almost wholly anonymous, the evidence loses a part of its weight. The views of men are placed side by side whose opportunities for careful study of an important subject and whose aptitude in expressing their convictions vary as widely as those of an equal number of men in business must necessarily. We may admit that a sacrifice is made when the opinion expressed is divorced from the personality of the writer. It would be absurd to canvass the matter as though a vote had been taken, and say: Ten furnacemen answered "yes," and three replied "nay." The prestige of the three, the magnitude of their business interests, the energy of their individuality might more than counterbalance the greater number of their opponents.

It would be a very difficult task for the one disinterested spectator, the only one possessing the data to measure the forces arrayed, to state his conclusions on the question with which side rest the weight of opinion and the preponderating influence. We may state that men of the highest standing, manufacturers and consumers, who would rank among the first in the councils of the trade, are on both sides of the question. In the entire discussion the point whether the chances for success are good, poor or indifferent has been little raised. As we pointed out, its solution will partly at least depend upon the attitude of the pig iron producers, and it was largely our object to throw light on this point. We believe that we have succeeded quite well. Our inquiries were sent out without any bias, without any attempt to call out principally the views of men whom we imagined to be either in favor of or opposed to the scheme. We may confess to some surprises. Producers from whom we expected unqualified assent have turned out to be opponents of the plan. Others whose interests seemed to lie in another direction have given it their support.

Among commission merchants there is the same diversity of opinion. On the whole, however, we incline to the belief

that a change of heart is likely to come quickest with this interest, so soon as developments should point in one or the other direction. In other words, their business methods probably possess relatively the greatest elasticity, and would adjust themselves to new conditions with the least friction.

To consumers, taking the largest number of replies into consideration, a good many of which we have not printed, the subject seems to possess comparatively remote interest. The majority of those who have studied the subject as it may possibly affect their business are inclined to regard it unfavorably, although there are important and conspicuous exceptions.

One feature must not be lost sight of, and that is that those who are pushing the plan, and many who sympathize with them, are likely to be far more active in their partisanship than the greater majority of those who are against it. Their opposition will probably be limited to passive resistance. They are not likely to rally in a manner which will make their hostility very effective. The scheme, so far as we are able to gauge the situation, must stand or fall upon its own merits. The difficulties are certainly very great. Different phases of them have been pointed out by some of our correspondents. It will depend upon later developments whether or not they will be overcome. The outlook is certainly not very encouraging.

Drawbacks on Exports.

Our tariff laws provide for the payment of a drawback on merchandise imported, subsequently manufactured and exported, to the extent of 90 per cent. of the duty, 10 per cent. being retained by the Government. Exact data on the magnitude of this business rarely reach the public, so that particular interest attaches to the figures lately submitted in a quarterly report of the Bureau of Statistics. For the past four years the figures have been:

Drawbacks on Exports.

Year.	Drawback.	Retention.	Paid.
1885.....	\$8,795,792	\$270,857	\$8,524,935
1886.....	7,822,873	278,619	7,544,254
1887.....	7,557,808	270,976	7,286,832
1888.....	3,108,905	219,548	2,889,357

The principal article on which drawbacks have been granted and on which the retention did not amount to the usual 10 per cent. was sugar, the details being:

Drawbacks on Sugar.

Year	Drawback.	Retention.	Paid.
1885.....	\$6,763,528	\$67,635	\$6,695,892
1886.....	5,705,711	66,903	5,638,807
1887.....	5,535,220	68,718	5,466,502
1888.....	1,097,531	18,413	1,079,118

These figures sufficiently explain the falling off noted particularly in the fiscal year 1888. Turning now to the articles in which the readers of *The Iron Age* are particularly interested, we tabulate as follows the amounts of the drawbacks, the retention being 10 per cent. in every case:

	1885.	1886.	1887.	1888.
Copper.....	\$88,802	\$101,420	\$102,751	\$109,539
Iron and steel:				
Iron.....	32,321	22,736	23,197	27,536
Iron and st'l.	45,010	95,091	34,957	27,015
Steel.....	6,863	24,295	62,073	77,397
Lead.....	35,039	15,156	10,733	11,818
Tin.....	1,271,250	1,365,393	1,232,036	1,082,715

Unfortunately, the articles are not more closely specified in the case of iron and

steel. The bulk of foreign raw material used by American manufacturers to cover export sales are slabs and plates for cut nails, tacks, &c., wire rods for barb wire and wire nails. The tin is, of course, tin plate imported for making the tin cans for petroleum cases, for fruit and vegetable canneries, &c. The bulk of the lead goes for the same purpose, being used for the solder. It is understood, as is natural, that the Standard Oil Company is the chief beneficiary of the drawback system, even the wire nails for the petroleum cases for export being manufactured from foreign stock.

The Development of the Sugar Interest.

There are few articles of prime necessity that have led to so much discussion for 18 months past, not only in the United States but all over the world, as sugar. Like all raw produce this staple had depreciated considerably while overproduction lasted, and some four years ago both cane and beet sugar were selling in the world's markets at a downright loss to the producer. Since then, assisted by low prices and abundant fruit crops, consumption has gradually increased sufficiently to restore the equilibrium between the supply and demand, speculation for a rise has successfully co-operated in mending values, improved processes of manufacture have been applied, and last year has been generally prosperous to the producer of the raw article. An important manufacturing interest has meanwhile been put in a shape showing better returns locally, while checking in its own interest a too rapid advance in the raw staple. We mean the sugar refiners' trust, to which the leading refiners on the Atlantic Coast together with one of the concerns on the Pacific acceded as partners and shareholders. These refiners some time in the fall of 1887 consolidated their interests in the amount of \$50,000,000 of watered capital and managed matters so cleverly that on this capital they cleared last year a dividend of 10½ per cent. Early this month the trust certificates advanced in a couple of days from 75½ to 87½, 20,000 certificates passing out of the hands of original holders on the occasion. There has been much agitation in and out of Congress, as well as in our Legislature, about the legality from a constitutional point of view of this and other trusts; there have been suits to test the matter, but it has as yet not been clearly shown that they can be seriously hampered or upset by legal process.

The effect of the sugar trust's management has been so important during the last year that it has overshadowed other events affecting the staple, not only in this country, but to a considerable extent in Cuba and even in Europe. As it was the object of the trust to exercise control not only over the manufactured article, but quite as much over the cost of the raw staple, the managers of the trust resolved to import for their account the bulk of the sugar needed. In this manner they discouraged the usual importation in the shape of consignments and orders for importers' account. While raw sugar, cane in particular, was thus as much as possible prevented from rising here and in the producing countries, the trust fixed a much higher percentage of margin as the remuneration for refining than had ruled

prior to the formation of this monopoly. Thus where in 1887 their net profit had been ½ cent per pound, they doubled it after the consolidation had been effected, and even secured a larger percentage of profit when, during the summer of last year, an extra demand for refined arose and continued for months. Claus Spreckels at San Francisco and some Philadelphia refiners, while declining to join the trust for reasons of their own, of course reaped all the advantages incident to the course of the market; this, however, has not deterred the former from building an anti-trust refinery on a gigantic scale in Philadelphia. The most remarkable feature in the trade is that in spite of the higher prices consumers of the refined article have had to pay there has been a heavy increase in the consumption:

Sugar Consumption in the United States.

	Tons.		Tons
1888.....	1,469,997	1883.....	1,164,391
1887.....	1,397,356	1882.....	1,077,949
1886.....	1,389,079	1881.....	1,008,932
1885.....	1,245,574	1880.....	907,109
1884.....	1,205,283	1879.....	831,896
Total.....	6,767,289	Total.....	4,990,277

The average yearly price of granulated (refined) for each of the past ten years has been as follows:

	Per 100 lbs.		Per 100 lbs.
1888.....	\$7.18	1883.....	\$8.65
1887.....	6.02	1882.....	9.35
1886.....	6.23	1881.....	9.70
1885.....	6.52	1880.....	9.80
1884.....	6.75	1879.....	8.81

While, as shown, our consumption has increased rapidly, our own Southern States have also turned out much larger amounts; thus the production during the crop year of 1887 to 1888 was 167,814 tons, as compared with 85,394 tons the previous year, Louisiana alone contributing thereto respectively 157,971 and 80,850 tons. At the same time the Pacific coast of the United States received from the Sandwich Islands alone last year 213,696,000 pounds, against 203,400,715 in 1887. Sugar made from molasses on the Atlantic Coast amounted last year to 58,840 tons, against 60,274 in 1887. Some progress is also being made in developing the beet-sugar industry in California. Furthermore, cultivation is being pushed in Nebraska, although no sugar factory has been as yet erected in that locality. The soil has been found to be well adapted to beet cultivation, which, in connection with the favorable climate, has encouraged a number of German farmers who have settled there to undertake the production of a crop, with the cultivation of which they had obtained experience in Germany. The results thus far have been encouraging, and a specimen of beet sent last autumn to the Bureau of Agriculture, in Washington, for analysis showed so high a saccharine value that capital has already been secured for the erection of a factory.

The weather is reported fine in Cuba, and receipts are increasing, but the disposition of holders is to delay sales for improved prices. There are no offerings yet from the British West Indies, although the crop season has begun. Advices from Brazil speak of the small quantity that is available, and the crop is now estimated to show a deficiency of 90,000 tons, compared with that of last year, hence the above estimate of 250,000 tons for Brazil

may have to be reduced to 190,000. Meanwhile the statistical position of sugar remains favorable, the visible supply in Europe and America, including Cuba, on February 1 being only 1,099,545 tons, as compared with 1,285,190 tons on February 1, 1888, and 1,499,486 tons on February 1, 1887. The present price of fair refining Cuba in New York is 4½ cents. The lowest price for the same we have had during the past four years has been 4¼ cents, and the highest 5¼ cents. This shows that under the circumstances raw sugar is remarkably cheap just now, and that there is plenty of room for improvement between now and midsummer, should consumption in this country make as good headway till then as has been the case last year.

Percy C. Gilchrist, one of the inventors of the basic process, has lately sent out his usual report, showing the quantity of basic steel made in different countries. In former years Mr. Gilchrist followed the rather awkward system of reporting for the year ending October 31. He has now, fortunately, adopted the calendar year. In the table given below the figures under 1887 are for 12 months, ending October 31, 1887. For 1888 the calendar year is reported.

The Make of Basic Steel.

Producing Countries.	1887.		1888.	
	Total Tons.	With under 17 per cent. carbon. Tons.	Total Tons.	With under 17 per cent. carbon. Tons.
England.....	364,526	233,358	403,594	276,476
Germany, Luxembourg and Austria.....	1,102,496	826,609	1,276,070	1,026,033
France.....	176,500	123,049	222,333	158,223
Belgium and other countries.....	60,950	39,716	46,237	32,300
Totals.....	1,704,472	1,222,732	1,953,234	1,493,032

It will be noted that mild steel continues to be the product which predominates, and that Germany holds its rank as the leading producer of basic metal. In our own country the only concerns which have lately made basic steel are Carnegie, Phipps & Co., at Homestead; the Otis Iron and Steel Company, at Cleveland, and the Pottstown Iron Company—the former two using the open-hearth and the latter the Bessemer converter. In his report Mr. Gilchrist makes the significant statement that about 600,000 tons of slag, containing about 36 per cent. of phosphate of lime, was produced with the steel, most of which was used as a fertilizer.

The architectural iron works at Chicago suffered last year from a decided curtailment of business. This year they are likely to be overrun with orders, if the present outlook is realized. Architects' offices are full of plans of buildings, projected for the coming season, both in Chicago and at outside points all over the Northwest. Estimates are being submitted by the architectural iron works on a very large part of this business, and much more is expected to follow. In some localities the building season will open very early, and contracts have already been placed for the ironwork. It is to be hoped that labor troubles will not intervene to mar the bright prospects. The agitators are at work, however, endeavor-

ing to create dissensions and to foment disturbances, and if they do not succeed it will be on account of the conservatism of the rank and file of the workmen, who are not now so easily influenced as formerly by self-constituted leaders.

CORRESPONDENCE.

Fuel Economy of Heating Furnaces.

To the Editor:—Referring to the discussion in a recent number of your paper on economy of heating furnaces, the writer begs leave to call attention to the performance of a gas furnace designed to give economy on a small as well as on a large output. It has radical changes in construction from the ordinary Siemens or regenerative type, a description of which will be given your readers as soon as the Patent Office has passed fully on their patentability. The furnace referred to has heated frequently as little as 3 tons per single turn, of small and particular shapes of iron for an 8-inch train, without affecting the consumption of coal per ton, it not being charged with metal more than half the time. It has heated ¼ ton of ore and 1½-inch iron billets from cold to a wash heat in 8 to 12 minutes. It has been fired from a black heat after standing idle one turn and heated ready for the rolls, a good heat of iron, in 1 hour from the time gas was first generated and turned into the furnace, the gas generator having also been idle and at a black heat. The coal consumption always included nights and Sundays, the furnace usually working four or five nights per week. I quote from a letter from the New Haven Rolling Mill Company, New Haven, Conn., who are using the furnace: "Referring to your gas producers, while running your furnace for about 12 months, we would say: We heated iron for the rolls with an average on one or more weeks' run of 250 to 300 pounds coal per ton."

Owing to the writer being confined in the West on other work during repairs, the furnace has since been rebuilt on the Siemens plan, with the result that the coal consumption on the same work has increased to about the highest figures given by your correspondents for gas furnaces, thus showing that there is still hope of improvement in this class of furnace. It is only fair to say that this furnace was isolated from others of its class, and was largely attended by workmen having no previous experience with gas furnaces. The mason work had no repairs during this time, but, owing to a defect in the draft connections and to errors in burning out, cleaning, &c., some work was necessary on flues and valves. The gas generator was operated at one time 11 double turns without removing ashes, owing to lack of care on part of workmen.

C. M. RYDER.

Findlay, Ohio, February 12, 1889.

Mr. Edward Cable, an old and respected resident of Brooklyn, died at his residence, 108 Skillman avenue, February 15, in the sixty-sixth year of his age. Mr. Cable was born in Frome, Somersetshire, England. His family there were large manufacturers of wire. Upon arriving in this country 40 years ago he came to Brooklyn, and, in connection with his brothers, he followed the pursuit of his ancestors, and until three years ago was general superintendent of the William Cable Excelsior Wire Mfg. Company, in which he was also a stockholder and director. Failing health compelled him to give up entire business connections, and upon the advice of his physicians he visited his native land. The trip, however, did not seem to aid him. Losses in his family undoubtedly preyed upon his mind and hastened his end.

The Mining Engineers.

The opening session of the fifty-third meeting of the American Institute of Mining Engineers was held on Tuesday evening, February 19, at Hardman Hall, Nineteenth street and Fifth avenue, New York, Andrew Carnegie being in the chair. In the absence of Mayor Grant, who had promised to welcome the engineers to New York, Mr. Carnegie spoke the words of welcome. President Wm. B. Potter, of the Washington University, St. Louis, responded on behalf of the institute, and read a paper reviewing the past year's work and the progress of the institute from the time of its organization at Wilkesbarre, Pa., more than 18 years ago, by 22 gentlemen then prominently identified with the iron, steel and kindred trades, until its present state of prosperity and usefulness. There are now on the rolls 1800 names. Professor Potter questioned whether the institute, with this enormous membership, would not become unwieldy, and whether its three meetings held each year in different parts of the country were not becoming more and more given up to excursions and the amusement of its members rather than the serious transaction of business relating directly to the institute and its objects. He urged the grouping of the various interests of the institute, and as a suggestion for such a grouping segregated iron and steel, the precious and base metals, geology and mining, and chemistry. Such a classification, he urged, was simple and natural and would not conflict territorially. Professor Potter also emphasized the importance of presentation at the meetings of more complete and clearer papers, referring to the majority of the papers as now read before the institute as lacking in detail, and in some cases as being not only unreliable, but often misleading.

Secretary Raymond then read a biographical notice of the late Erich C. Schaufuss, contributed by J. H. Bowden, of Wilkesbarre, Pa. Mr. Schaufuss was a member of the institute, and lost his life in a gas explosion in the mine. The circumstances surrounding this accident were of a peculiar nature, and called forth an opinion by Professor Raymond, who cited his own experience in the mine, and spoke at some length on a subject in which his listeners were deeply interested. Dr. Raymond paid a touching tribute to the memory of the deceased engineer, and gave it as his opinion that when the gas ignited Mr. Schaufuss threw himself face downward on the ground to allow the flame to pass over him, and, his clothing catching on fire, thought the flame was still passing over him, lay too long, or, in the confusion of the moment, rushed the wrong way, and was overcome by the after-damp. The explosion was caused by a naked lamp carried on the hat of a miner, who, absurd as the case may seem, was carefully guarding a safety lamp carried in his hand. Dr. Raymond then spoke on "End-Lines and Side-Lines in the Mining Law," using the blackboard to illustrate the subject. He was closely followed by his audience, and his ready and brilliant oratory and graphic illustrations brought out hearty applause at the close. The meeting then adjourned, to meet in the morning, to visit the Edison Laboratory, at Llewellyn Park, N. J., and the Spiral Weld Tube Works, near Newark.

The New York Phonograph Company has received a certificate of incorporation. The capital is \$1,250,000, and the trustees are John P. Haines, of Tom's River, N. J., John D. Cheever, Richard Townley Haines, Noah Davis, William Fahnestock, W. Seward Webb and John L. Martin, of New York City.

Pig Iron Warrants.

OPINIONS OF THE TRADE.

We have received from a few furnace companies letters which reflect the views held by producers, which we present below, a prominent manager in Eastern Pennsylvania writing:

We are not favorably disposed toward the proposed Pig Iron Warrant system. We believe it will result injuriously to producers of pig iron, particularly to those that own their plants and do business chiefly on their own capital. Supply and demand regulate the prices of pig iron, irrespective of individual costs. When the supply exceeds the demand prices fall and reach a level without regard to the average cost, until the losses incurred compel the blowing out of sufficient furnaces to restore the equilibrium. The stoppage of furnaces not only paves the way for an ultimate advance in selling price, but from reduced demand also lessens the cost of raw material. Those furnaces that by location or superior management are able to continue in blast are thus enabled to tide over the period of extremely low prices, preventing too great a curtailment of production and the possibility of an iron famine. The quicker the readjustment between production and consumption is attained the sooner will prices be brought to a fairly remunerative basis. With the present large producing capacity of the country, and the ease with which production may be quickly increased, as shown within the last few months, there is not much danger of prices advancing unduly high from any lack of iron to meet all legitimate demands, unless speculators enter the market and by large purchases compete with consumers and temporarily withdraw large blocks of iron from consumption. By rapidly advancing the price of iron, and with it the cost of production, speculators have always proved injurious to the best interests of the producers. When the reaction comes, iron falls in price much more rapidly than the cost of making can be reduced, and the average result of the "boom" is a loss to the manufacturer. There is an increasing disposition on the part of conservative furnaces to sell their product only to consumers, especially when there is a brisk inquiry.

The warrant storage system, we believe, will encourage speculators to gamble in pig iron by affording increased facilities, and will thus introduce a more or less permanent disturbing influence in the trade. Besides, this system will offer inducements to continue the production of iron when it is not needed, by enabling financially weak concerns and those not economically managed to continue producing when under natural conditions they would be forced out of blast. Such is the general publicity given to the pig iron business, the mere fact that furnaces are producing in excess of the wants of the country is sufficient to weaken prices, even if the iron made is not thrown on the market. We would thus suffer from low prices, and obtain no corresponding reduction in cost from lessened demand for raw material. The blowing out of numerous furnaces assures the buyer that bottom prices are about reached and encourages buying. The storage system, we believe, would be injurious in two ways—lowering prices by encouraging unhealthy and unnatural competition and by increasing the cost of manufacturing. The conditions under which pig iron is made are so various and the circumstances influencing cost so diverse, that any combination to control and adjust the differences is not likely to meet with any enduring success.

We are of the opinion that all interested in the business will ultimately be better off by allowing the laws of supply and demand to regulate the trade without any artificial restrictions.

The efforts of the Philadelphia and Reading Railroad Company, following the panic of 1873, to relieve the furnaces in their territory by purchasing and piling their excess product, resulted injuriously to all concerned. The furnaces, encouraged to continue in blast much longer than the conditions of the trade warranted, lost heavily in consequence, and the railroad company did not escape. For several years after the purchases ceased the furnaces were compelled to compete with their own brands, offered for sale by the railroad company. These large stocks were a constant menace to the trade. Buyers continually made use of them as an argument to weaken prices, and it was quite a relief to all concerned when it was known that these stocks had finally been disposed of. The local aspect of affairs improved almost immediately. If this was the result of a storage system on a small scale and confined to a limited section, what will be the result if a new one on a large scale is extended over the whole country?

From Virginia comes the following:

The plan of the warrant company strikes me as being unfavorable to iron-makers in general, and, therefore, to us. It presents itself to me thus: The changes in the market are no longer to be effected by supply and demand, but are to be placed in the uncertainties of speculation. The statement that the extremes heretofore experienced shall be obviated seems possible, but not if the warrants are made "a medium for speculation." What control can the company then have? The stock of iron is in warrants, which are in the hands of speculators; trade is brightening and they will not sell; furnaces have no stock and advance prices, but before they reap any benefit speculators unload, prices decline and makers can again begin to store their iron on warrants, furnace-men always getting low prices and speculators the benefit of the advance. We the buzzard and they the turkey, all the time. To talk about making matters better for us by putting prices in the hands of stock gamblers does not seem to me to rise to the dignity of second-class nonsense.

A large concern in the Shenango Valley writes:

I believe that any organization the object or final result of which will be to make the pig-iron product of this country the subject of exchange board speculation and gambling will be an unmitigated evil to the pig-iron manufacturers, except so far as it may furnish convenient certificates of storage, which can be used as collateral for necessary loans. This purpose can be accomplished equally as well, or better, by the organization of responsible storage companies in the different centers of manufacture, as has already been done in Pittsburgh and Cleveland, and possibly at other points.

A producer in Jackson County, Ohio, writes:

My opinion is "the creation of pig iron warrants as a medium for speculation" will unfavorably affect the interests of the legitimate maker of pig iron. Under the arrangement proposed production will go on regardless of consumption until stocks become abnormally large, and the surplus metal in the warehouses will stand a perpetual menace to our business. The further we are removed from speculators and speculative tendencies the better. I speak from the standpoint, of course, of a *bona fide* pig-iron maker, and not from that of the boomer, the speculator or the money

lender, in whose interest this scheme is launched. It will be a sorry day for the producer and laborer of this country when we have in sight one or two years' supply of pig iron, as ingeniously advocated in "the argument."

From a large charcoal iron works in Michigan comes the following: "We would be in favor of the plan, as it seems that it would work beneficially to the trade. Pig iron warrants in Scotland and England are transferable and good as any bank paper, bills of lading or cash."

Another large producer in Michigan writes:

I suppose the apparent necessity for the proposed syndicate comes from the fact that there is an overproduction of metal, and that some concerns must have ready money for their output even though the market should be found below what it ought to be. The remedy proposed is to relieve this class of manufacturers by giving them what they want without a corresponding injury to the market. If my premises are correct, it is an open question with me whether the proposed plan would not in the end do more harm than good. If too much iron is being manufactured, those who ought not to be in the business must retire from it, and the sooner they do this the better it will be for those who are so situated, both as to location and capital, as to entitle them to stay in. The plan proposed will increase rather than diminish the output, and keep on their feet—for a time at least—those who should not have ventured in, or who being in would otherwise go out of business. Again, I presume that if enough of the furnaces were provided for in the manner proposed a false market would be the result, and, generally speaking, it seems to me better that the laws of trade should be left to solve the difficulties in question without what, to me, seems a false support. Inasmuch as this company would not have occasion to deal with the proposed syndicate, I believe that the creation of one, if successful, would unfavorably affect our interests. When I say "our interests," I mean the interests of all furnaces so favorably situated as to make a fair profit at the present price of pig iron.

Probably the point which it would be most difficult to determine is

The Attitude of Consumers.

With the exception of the large rolling mills, the cast-iron pipe works, the greatest stove concerns and manufacturers of architectural castings and hardware, the great majority of consumers melt only relatively small quantities of pig iron. To them the cost of raw material is not so absorbing a subject of consideration that they have given much thought to the questions which might affect the trade. Among

THE ROLLING MILLS,

we turn, first, to those of Pittsburgh. A maker of high grades of rolled iron writes:

We have an institution here called the Union Storage Company, which is very prosperous and we imagine does a similar business to the one proposed in your article, as they issue bankable certificates. We doubt if the institution proposed is not an incroachment on the field of legitimate operations of the consumer and manufacturer, and contrary to the natural laws of trade. They may give a field for the man who wants to speculate on margins, but we think that they do not help a properly managed manufacturing business.

A large firm of steel makers state:

We do not see that the introduction of pig-iron warrants as a speculative medium

could have any beneficial result on our business, or in fact on any legitimate business. The less speculation there is in the standard products of the country, the better the business interests will be served, and the less the rights of the public will be interfered with, in our judgment. We do not hesitate to say that storage companies who issue certificates for iron deposited with them are a benefit to people who handle pig iron, and when it is confined to the legitimate business transactions in that commodity no harm can come to trade, but when it is used for speculative purposes we regard it as unnecessary and dangerous.

One of the great manufacturers of Pittsburgh says:

Distances in this country are so great that it is difficult to make a comparison with Great Britain in the storage warrant matter. I am glad to see the experiment tried and am inclined to think it would be a success. It should have the effect of keeping values of pig iron uniform and prevent the wild fluctuations we have been accustomed to, and which do the trade immense harm. Of a great staple like pig iron there should be a greater stock than we have been carrying.

A rolling mill in Eastern Pennsylvania, which occupies a leading position in the trade, sends the following communication:

As a consumer of pig iron, I am of the opinion that the natural effect of the warrant system as proposed by the American Pig Iron Storage Warrant Company will be, for a time, to corner the market and thus advance the selling price; but later to give us a low range of values in that material. It will, of course, be used mainly by the weaker concerns, who have not sufficient capital of their own to carry heavy stocks. The warrant company can only be made a success by securing large accumulations of pig iron stored in different portions of the country. Experience has taught us that large stocks, even when held by the strongest concerns, are a constant weight upon and menace to the market, and inevitably result in lower prices.

A large mill in Eastern Pennsylvania, producing plates and nails, takes the following view of the matter:

We consider any sort of a speculation injurious to business, and it is a matter of hesitation as to whether or not the parties at the bottom of this scheme would not be disposed to use it for speculative purposes. If the effect would be the equalization of the extreme rise and fall of prices we would have no doubt it would be a benefit to general business.

A plate maker in Pennsylvania sends us the following:

We believe that the American Pig Iron Storage Warrant Company, if conducted according to the plans outlined in your issue of the 31st ult., would prove a very good thing to the iron trade generally and to the country at large. Our principal reason for this opinion is the firm belief that a company of this kind would prove a most effectual factor in preventing the great fluctuations in the price of pig iron which are so serious and disastrous to trade.

From the Mahoning Valley we have the following:

Replying to your circular letter of the 1st inst., we do not believe that any medium of speculation would favorably affect the interests of legitimate manufacturers. We do think that a storage company, well organized, and whose charges would be low (for cost of storage at furnaces would be nominal), would be a general benefit to the trade in lessening the

fluctuations of the market by carrying sufficient stock to meet the wants of manufacturers for three to six months ahead.

The owners of another Pittsburgh rolling mill write:

We cannot see that any benefits are to be derived either to the producer or consumer of pig iron by passing through a middleman or storage company. In our opinion the nearer you can bring the producer of pig iron and the consumer of pig iron together the better for both.

A large consumer of mill iron in Ohio puts himself on record as follows:

I think the creation of a warrant system will promote the accumulation of large stocks of iron, which would be an injury to the legitimate pig-iron producers. The furnace capacity of this country is quite large enough to supply all probable demands for pig iron on short notice and at reasonable prices, without accumulating a large reserve. Furnaces that cannot sell their product at remunerative prices and have not got the capital to enable them to hold their iron had better bank-up.

The manager of another Ohio rolling mill tersely says: Let it come, as it is bound to do before long. Those who desire can use it for financial help, others need not. Time and trial will test its merits.

A concern in New York producing bars and structural iron writes: "We do not think well of the proposed Iron Storage Warrant Company. We believe that it will bring a speculative element into the business which cannot be beneficial. In times of depression in the trade, as it now exists, small concerns, with limited capital, go out of blast, and remain out until trade revives. The new system, as we understand it, would furnish means for these concerns to go on, at a loss to themselves primarily, and aid in continuing the depression, and work injury to the trade generally."

A nail-maker on the Susquehanna states: "We think it will be prejudicial, as it will lead to greater extremes in prices and less stability, as it aids to production on an overstocked market when a diminished production would have a more wholesome effect. It further increases the cost to the producer, plus the charges, and stimulates speculation, for which the warrants would furnish a convenient method. Believing a steady remunerative market the most conducive to the interests of the consumer, as well as producer, we think its adoption a positive evil."

A rolling mill in Ohio sends the following communication: "We have read the plan proposed by Mr. Hull, for the establishment of an American Pig Iron Storage Warrant Company, and readily fall in with the idea. We think that the objections raised to the warrant system by some are more than offset by the many advantages that attend it. We fully indorse the sentiments expressed by the projectors of the plan and hope to see the company on a good sound footing."

Among the largest consumers of pig iron as founders are

THE CAST-IRON PIPE MAKERS.

Among them P. D. Warmer, Chairman of the Mellet Foundry and Machine Company, of Reading, Pa., sends us the following communication:

We are in sympathy with the movement, under the belief that it would estab-

lish a more steady value in pig iron and prevent sudden and unnatural fluctuations in prices. It would also have a tendency to increase or diminish the production in proportion as the quantities in the storage-yards would be increased or decreased from time to time. In short, we think it would bring about a safer condition of things in our trade, as in all others using pig iron in considerable quantities, and also prevent that reckless competition among furnacemen and prove the necessity to other manufacturers of having their business regulated in some such way with their competitors to save themselves from ruin during such times as the present. This, however, has latterly been getting to be pretty well understood by people who have sense enough to get out of the rain. The more people talk against trusts and combinations of either labor or capital the more there will be of them, and the stronger they will become, but when let alone they will work out the best possible results—ultimately for the country at large.

Another large pipe-maker writes: "Our impression is that it will be a good thing for both producer and consumer, as it will have the effect of lessening the fluctuation in prices."

A large purchaser of pig iron writes:

In our judgment the key of success in such a movement depends upon the uniformity of quality which the storage company can guarantee for the iron which is covered by their warrants. In saying quality we do not mean grading, but the character of the metal, its constituents and impurities. If they can overcome this difficulty in addition to those that are more simple consumers of iron can become purchasers, but without some such guarantee we do not see how the warrants can become merchantable articles, although they may answer the purpose of speculators. We fear that the fluctuations of the value of pig iron will not permit the annual cost of carriage which we understand has been adopted by the storage company. This, however, is a matter which only affects those who speculate in the warrants. The effect of a large block of metal being in part covered by warrants, and which can be added to or taken from according to the demands of trade, is theoretically good upon the market. To what extent it will be possible for the storage company to overcome the obstacles which surround it time alone can tell, but the removal of the two which we have pointed out we think is essential for its success.

The president of a large Western pipe foundry says: "We cannot see how the consumer can be benefited in the least, but, on the contrary, it will work to his detriment. We cannot help but think that many of the furnacemen will have a desire and disposition to work in harmony with those who actually use their product, rather than with those who use their warrants only for speculative purposes. We suppose that that was the main purpose aimed at in the organization of the warrant company. To err is human, and we may be wrong in our impressions, but we doubt it."

To producers of pig iron, one of the most important classes of customers are

THE STOVE MANUFACTURERS,

from some of whom we have the following letters, the first being from one of the largest and most progressive firms in the trade:

I have good reasons to believe that this subject is not thoroughly understood by those whom it might seem would be in-

terested, and, for proof of this, would say that during the past few days I have had the question asked me by different well-informed gentlemen as to what effect this would have upon the price of pig iron. My answer was, "I cannot see that it will have any effect," and when I came to talk with these parties, and I must admit that I was not thoroughly posted myself, I found that such was the case with those who asked the question. So I undertook to get informed myself, and I find that this is simply a company formed for the following purpose—viz., to grade and weigh the production of any furnace and give a warranty as to the number of tons and the grading of any iron that may be piled up in the yards of the furnace. They give a written warranty to the owner or manager of said furnace, charging for their services 25 cents per ton for the first month, and 2 cents per ton for additional months so long as the iron may remain unsold. A capitalist, or any one having money to invest, makes inquiries about a certain lot of iron, and finds that this warranty held by the furnace gives him the information of the number of tons and the grade, so that he feels safe in investing. After the investment is made if the iron falls below the grade or the tonnage falls short the storage company holds itself responsible. The new company is formed as near like the Pig Iron Storage Warranty Company in Scotland as possible. Now, I fail to see how this is to affect the price of pig iron. It may be that through the formation of this company, which is similar to others that have been previously formed and are in existence, a larger amount of iron may be in store at the close of any year than heretofore, but through the medium of this company it may become somewhat speculative. Parties looking for investments will think that they can make a purchase of these warranty receipts, which are held with more safety. Beyond this I cannot see a point where the pig iron business proper is to receive any real benefits. It may enable pig iron manufacturers to obtain loans much easier by having a certain tonnage of pig iron in their yards, surrounded by a fence, if you please, with a lock and key on the gate, than under former plans.

An Eastern concern writes:

The American craze seems to be for speculation. We are not speculators, and we feel little interest in the proposed scheme for a pig iron storage warranty company. Neither do we quite see how such a scheme can become very successful. If all pig iron were of one quality there would be no difficulty, but with two or three grades from every furnace, and about as many qualities as there are furnaces, there will, we think, be many difficulties to surmount in perfecting the scheme. As to prices, we doubt if they will be affected much either way through what speculation may be done in this line.

A Troy stove-maker sends the following communication:

I am opposed to the plans of the American Pig Iron Storage Warranty Company. I believe that speculation in pig iron by the general public would be injurious both to the producer and consumer, because, although they might be benefited incidentally, its usual tendency would be to increase the cause of abnormal fluctuations in the demand for pig iron, which would be a menace to legitimate trade and a benefit to professional speculators. It has been truly said that pig iron is a delicate barometer for indicating the condition of trade; and the reason is its susceptibility to the influences which regulate trade. Abnormal conditions of trade are made more intense by speculation and the reaction from speculation, and, consequently, a commodity so susceptible and important

as pig iron should be kept as free as possible from its influence.

A large works in the same center write:

It is our opinion that a pig iron storage warrant company would be a valuable adjunct to the manufacturers, dealers and consumers of pig iron, for the reason that it would tend to steady the values of such products in the general markets of the country. We have given no consideration to the speculative value of such a movement, and cannot judge of the effect of any warrants they might issue, excepting that through their medium we should be able to determine prospective values more readily than at present.

One of the most thoughtful of Pennsylvania makers sends the following:

We cannot look upon the contemplated scheme with satisfaction, preferring as we do competition to sumptuary control, and while admitting that competition is attended with evils, yet we are impressed with the idea that centralization will gravitate to greater. We cannot help feeling that such methods of consolidation and restriction are primarily inconsistent with our free institutions and independent individual effort, and will eventuate into selfish and unnatural conditions.

From Michigan comes the following:

We are not purchasers or consumers of pig iron, but buy large quantities of iron castings and tubing. Anything that would cause sudden or marked fluctuations in the price of the crude article would necessarily stand in the way of our making as favorable contracts for our yearly supply as we are able to do in the present condition of the market. We should therefore deplore the introduction of pig iron warrants as a speculative medium.

Western Commission Merchants.

From Pittsburgh we have the following: "I think that the effect of the general introduction of that plan would be adverse to the interests of the commission merchants generally, and would probably drive many of them out of the business, as there would be less need for their advancements, and the warrants could probably be handled by brokers who at present have nothing to do with pig iron."

A second Pittsburgh firm writes: "We have a local organization somewhat of the nature of the storage company, which is prominent and competent, and as we take it the idea of this company you mention is to simply make a national company to do what the local companies are now doing. We do not know of any particular benefit to be derived from the organization of this company you mention, as our local company—namely, the Union Storage Company—is now doing, as far as we know, just what this company you mention would be supposed to do."

A Cleveland firm writes:

If the plans of the American Pig Iron Storage Warranty Company are carried to completion they will, no doubt, be taken advantage of largely by the makers of Southern pig iron. This being the case, it seems natural to suppose that the business of the commission men handling the product of that region will be diminished, owing to the fact that the storage company will enable the furnaces to raise money without putting their metal into the hands of commission men to be sold at any possible price. The storage company will be able to do what the commission man does now, i. e., be able to raise money. The introduction of the warrants as a speculative medium may possibly open to the commission man a new line of

customers others than the legitimate users of pig iron, thus in a measure helping him out of the loss of business occasioned by the storage company entering the field. This last feature, however, will take time to become popular, it strikes us.

A Louisville house says:

The names of the gentlemen connected with the scheme of the American Storage Warrant Company are certainly all those of good, substantial men. The organization seems to be a good thing for the producers of iron who find it necessary to place their iron in storage at their furnaces for the purpose of having warehouse receipts issued to them for the purpose of raising money on the same. This privilege has already been in force for several years past by storage-yards being established at several of the leading markets in the West and South, where they could place their iron in storage and receive warehouse receipts on the same, at a less cost to them than the American Pig Iron Storage Warrant Company offers. I hardly think it will have much effect, if any, on the commission merchants of this section, as I do not believe that any of them will want to speculate in the warrants. However, this may be done in the East—in Wall street. As to its being a success, that depends largely upon the company being able to control the output of all of the furnaces, and how this can be done I cannot say, as the territory to be covered is so large and the interest so great, and there are so many furnaces who do not want their iron tied up with warrants, much preferring to keep it free.

A Detroit firm reports:

We do not think that the successful introduction of pig-iron warrants as a speculative medium would affect commission merchants, for the reason that if a surplus is to be accumulated with no prospect of any material advance in price, the furnaces that sold their iron as made would make more money, and the ones that employed agents would be more likely to dispose of their iron, and others that did not would accumulate the surplus, and in the mean time would be paying interest, thus increasing the cost of their iron far in excess of the amount paid as commission for selling.

A leading Cincinnati firm writes:

We are in favor of anything that will improve the status and prospects of pig iron making in the South. It is quite apparent that something is needed to avoid the extreme fluctuations in prices that result from changing conditions of the market, and from the need of large producing companies to realize promptly on their product, whether the market is favorable or not. It looks as if a storage or warrant system in which the companies would freely join would act as a regulator. It should enable makers to carry their iron in times of depression without concentrating their capital on their iron yard, and in times of high prices it will enable them to get the benefit of the market. At the same time, there are some features that render any large success of the scheme problematical, in our judgment. One is that even under the most favorable conditions the storing and carrying of pig iron is attended with considerable expense. It must necessarily be handled twice. Storage charges must be paid, if the metal is properly looked after. Interest is no small item. Taking these things into account, it is clear that iron must be sold at an advance of nearly \$2 per ton to warrant a producer in putting it into storage and holding it for a year. We think it will prove that most makers will prefer, when they have an accumulation, to close it out at any price that will not involve actual loss rather than speculate on an advance of \$2 per ton.

Another possible difficulty is that the market is not yet quite ready, especially in the West, to do away with the identity of special brands and buy Alabama or Tennessee iron on warrant, without knowing what brand is to be obtained. While Southern makes are similar in character, there is unquestionably a decided difference in quality, carefulness of grading and uniformity. The warrant system would enable furnaces making inferior iron to unload it on the market on equal footing with those making the best iron. This would place the latter at a disadvantage that they would not be apt to submit to long. The natural effect would be that prices for storage iron sold without brand named would have to run about 50 cents below the market for standard irons. As stated at the outset, the workings of the plan will be at first experimental, and it may prove that as its operations come to be better understood these objections will disappear. All, in our judgment, will depend on the thorough care and conservatism of its management down to the smallest details, and on the spirit in which the leading furnace companies enter into it.

One of the great Chicago firms briefly puts the matter thus: "We consider the plan perfectly practical, and it should be profitable to the stockholders, if well managed, and also of benefit to the entire iron trade. The only question in our mind is as to whether one large company is better than local companies for each prominent point."

From a Warehouse Company

long established we have the following:

The negotiable character of the warrants which the American Pig Iron Storage Warrant Company propose to issue will doubtless induce many furnace-men to consider favorably the establishment of a storage yard on their premises, under the charge of this enterprising company. Where the producer needs facilities for disposing of his pig iron promptly at ruling market prices the warrant system will doubtless enable him to realize quickly. This will throw the burden of carrying on a speculative public, who hope to market the iron at the advanced price which the producer, through lack of capital, perhaps, has to forego. A feature of the warrant company, however, which is spoken of as one of its chief recommendations is by no means new. We refer to the facility which is offered producers for borrowing money on their iron to carry it over a depression, or to avail themselves of capital otherwise tied up by future sales. The Philadelphia Warehouse Company, it appears, has been practically doing this business for many years in a quiet way. This company leases ground at the furnace on a nominal rental and has iron stored thereon. Instead of issuing warehouse receipts or warrants and charging storage on the iron thus deposited, they loan the money or credits themselves to the furnace companies, without making charge for storage. By this method a considerable saving is made by the borrower, who only has to pay a moderate commission in addition to the interest the bank or lender would charge him for negotiating his warrant. The capital of this company is \$1,000,000, full paid, with a good surplus, so that, though able to do a large business, they cannot supply the needs of all the many borrowers having this class of collateral; and there will be, no doubt, room for a new, energetic and well-equipped concern such as the American Pig Iron Storage Warrant Company.

An improved system of rapid transit for New York City would cost, it is estimated, about \$30,000,000.

Washington News.

(From Our Regular Correspondent.)

WASHINGTON, D. C., February 19, 1889.

The parliamentary prospects of the Committee on Ways and Means for the purpose of circumventing the tactics of the tobacco tax repeal leaders have collapsed. The effort to get signatures to a call for a caucus last night developed the fact that Chairman Mills could not secure the majority, so as to have control of the situation. He and his friends, therefore, regarded it as the part of prudence not to attempt to force the fight.

There are now four propositions before the House, three of them from the Committee on Ways and Means.

1. The Mills resolution of unconstitutionality of the Senate substitute, which is simply a subterfuge, as the Senate has never claimed the right to originate revenue legislation, but has the constitutional power to amend. This was established by the fact that the existing tariff of 1883 was a conference measure based upon a House bill and a Senate substitute.

2. The McMullin tariff bill in the line of the Mills bill. In his report from the Committee on Ways and Means Mr. McMullin begins with an attack upon the Senate committee, some of the provisions of which are characterized as entirely inexcusable. The report says that the committee, being unable to agree to any tariff bill which gives no relief to the people, but which increased these burdens, have prepared the accompanying bill, and tender it in the hope that it may be accepted and adopted. While it does not make all of the reductions that the present condition of the Treasury and the best interests of the people demand, it is tendered in a spirit of compromise. Figures are given to show that the bill would reduce the revenues by \$72,133,029. The remainder of the report is made up of an argument in favor of tariff reduction based upon an array of figures showing the value of agricultural products at different periods.

3. The compromise scheme of Breckinridge, embodying all the provisions of the Randall tobacco tax repeal bill. It puts tin plate and wool on the free list, and proposes a woolen schedule by which the rates are reduced correspondingly, and it remedies the present unequal provisions as to woolen and worsted fabrics. It removes the tax on tobacco, and includes the provisions of the bill adopted by the House (the Mills bill) as to tobacco.

4. The Cowles bill with the Randall substitute, repealing all of the tobacco taxes. In their report the majority of the Committee on Appropriations explain that sections 1 and 2 repeal all internal taxes after June 30, 1889, on cigars, cheroots and cigarettes, snuff, manufactured tobacco, the special taxes on manufacturers of tobacco, dealers in leaf tobacco and on peddlers of tobacco. The amount of revenue received from these sources during the fiscal year ended June 30, 1888, was \$30,662,431. The enactment of the bill would reduce the estimated surplus for the fiscal year 1890 from \$53,432,511 to \$22,745,165, a result—whether viewed from the standpoint of an excessive revenue or as a relief from unnecessary taxation upon the people—most desirable. The committee believes that the bill furnishes a practical and simple means of reducing the surplus revenue, as it is evidently impossible, at this late day of the present Congress, to pass any bill involving a complete revision of our whole revenue system. The minority report, presented by Mr. Forney, is confined to a simple recommendation looking to the passage of a substitute bill made up of the sections of the original Cowles bill, repealing the taxes on chewing and smok-

ing tobacco and snuff, all special taxes on manufacturers and dealers, and all taxes on dealers in leaf tobacco; and fixing at \$3 and \$1 the annual tax on cigar manufacturers and dealers in tobacco respectively.

The effect on the revenue under the House bill and the Senate amendments, as shown by the Treasury Department figures, is House bill reductions: Customs, \$50,350,345; internal revenue, \$17,616,234; total, \$67,966,579. Senate substitute: Customs, \$13,976,887; internal revenue, \$33,905,780; total, \$47,882,667. Average ad valorem rates: Existing law, 46.91; House bill, 42.38; Senate substitute, 46 per cent. The effect on metal duties would be: Collected 1887, \$22,524,007; estimated House bill, \$14,991,704; estimated Senate bill, \$30,585,569.

With these conflicting interests in view the prospects of concurrent action are very problematical. The attitude of the Committee on Ways and Means seems to be inspired largely by a personal opposition to Mr. Randall. The latter gentleman, in the meantime, is backed by fully 70 of the Democrats of the House on the internal revenue repeal question. The Republicans are holding aloof, and will not co-operate in the House, although all their members on Appropriations voted with Randall to report the Cowles bill and substitute. The Republicans, anticipating an extra session, prefer to dispose of this matter in their own way.

STEEL INSPECTIONS.

The conference of naval officers, steel manufacturers and shipbuilders in regard to simplification of methods of steel inspections has resulted in a better understanding of the three interests involved in the turning out of ships of war, but will not result in any very material change in the method of conducting the tests of steel. The report of the three officers, Naval Constructor, Engineer-in-Chief and President of the Board of Steel Inspection, has been prepared. It is understood that no very material changes have been recommended. The transportation of material for testing to certain points, and, if unsatisfactory, its return involves expense and delay. A plan is proposed which will divide the labor of tests between the manufacturer and the officer of the Government, which will obviate the necessity of the present large force on that duty. The final tests will be made by the Government, but the heats will be watched by the manufacturers.

THE CAST-STEEL GUN.

The successful statutory test of the open-hearth cast-steel gun, cast by the Standard Cast Steel Company, of Thurlow, at the Naval Ordnance Proving Grounds, has again raised the hopes of the projectors of cast-steel guns, notwithstanding the forlorn showing of the Pittsburgh gun. The two preliminary and ten Government test charges, 100-pound projectile, fired within 33 minutes were entirely satisfactory as demonstrating the feasibility of the manufacture of such guns to stand rapid and continuous firing. The manufacture of the gun required 13 tons of open-hearth steel. Completed it weighed 13,120 pounds. The walls at the breech are 7½ inches thick and at the muzzle 2½ inches thick; length of gun, 193½ inches; tensile strength of the metal, 80,000 pounds; elongation, 21 per cent.; reduction, 19 per cent.; elastic limit, 40,000 pounds. With a charge of 48½ pounds of powder a conical shell 100 pounds weight has a muzzle velocity of 2000 feet per second. The Government pays \$5300 for the gun. The ordnance experts are much interested in the work of the first gun, but are not yet willing to admit that the system has any prospect of producing an immediate revolution in gun-making, nor that it will seriously interfere with the built-up guns.

TRADE REPORT.

Philadelphia.

Office of *The Iron Age*, 220 South Fourth St.,
PHILADELPHIA, Pa., February 19, 1889.

Pig Iron.—The market does not show much change, although the general report is of a somewhat favorable character. There is no pressure to effect sales unless at figures pretty near to quoted rates, while the extremely low-priced lots appear to have been unloaded or withdrawn from the market, and are now held for better figures. There is some irregularity, nevertheless, and statements as to actual selling prices do not harmonize as closely as could be desired. Ordinarily good No. 1 Foundry commands about \$18 at tide; No. 2, \$16.50 @ \$17, and Gray Forge, \$15.50 @ \$16. Some very fair brands of the last named are available at \$15.25, and in some cases No. 1 at about \$17.50, but they are what may be called chance lots, and are not offered indiscriminately. Indeed, as a rule, consumers who want their old "stand-by" irons have to pay quoted rates; and while there are what are claimed to be "equally good" qualities at less money, they are not taken with much avidity. To sum up the whole business in a few words, it may be said that the market is working toward uniformity and steadiness in prices, and that supply and demand are in better proportions than they were two or three weeks back. Prospects as regards demand are fairly encouraging, and while there is nothing to indicate any specially heavy movement, an event of that kind should not cause much surprise, as there is undoubtedly a vast amount of work to come on the market sooner or later. Matters are not sufficiently advanced, however, to warrant very confident predictions, although it is a contingency not to be ignored, nevertheless. There is another feature, however, which should be kept in mind, viz., that Pig Iron makers are adjusting themselves to an era of low prices by reducing cost, in the belief that the conditions favor that course, rather than the expectations of a substantial improvement in selling prices.

Foreign Iron.—Bessemer is nominal as last quoted, viz.: \$19.50 @ \$20, c.i.f., duty paid. Spiegeleisen is quoted at from \$28.25 to \$28.50, c.i.f., duty paid, for 20%, with a sale of 2000 tons at about the inside quotations.

Blooms.—There is a good demand for all grades of Steel, and while prices are somewhat irregular, they are approximately as follows: \$28 @ \$28.50 at mill for Nail Slabs; \$29 @ \$30 for Sheet Iron Billets; \$30 @ \$31 for Soft Tank, and \$35 @ \$36 for Flange purposes; Charcoal Blooms, \$52 @ \$54; Run-out Anthracite, \$42 @ \$44; Scrap Blooms, \$32.50 @ \$34 1/2 "Bloom" ton of 2464 lb.

Muck Bars.—Prices have not been fully maintained, as sales were chiefly at about \$27, delivered. Some of the best makes are held at \$27.50 and upward, but no transactions have been reported at over \$27 since date of our last report.

Bar Iron.—The position has not improved very much up to this writing. Mills in the interior are said to be getting more orders, while local mills are doing fairly on small day-to-day transactions, but there is no improvement in prices. No large lots are being inquired for at present, and while the trade naturally expect a favorable change soon, there are no immediate indications of such a movement. Prices, as we remarked last week, are hardly

quotable. Some mills maintain 1.80¢ @ 1.85¢ as their price for Best Refined Iron, others 1.70¢ @ 1.75¢, with still lower rates mentioned as prevailing at interior points. Skelp Iron is likely to be wanted in large quantities, but there are so many mills waiting for orders that prices are kept at the lowest point yet reached. Last sales in this market were at 1.75¢, delivered, but buyers are holding back, fearing that still lower prices may prevail before things take a good start. Sellers quote 1.75¢, and could not shade that figure without making a loss.

Plate and Tank Iron.—There is no special movement to notice at present. Some of the mills are fairly employed, but they are all open for business at current rates, so that prices do not show much firmness, although they have been crowded to so low a point that it is hardly possible to go further in that direction. The outlook for summer work would be considered very encouraging under ordinary circumstances, but there have been so many delays and so many disappointments that manufacturers prefer the bird in hand, even if it is a poor kind of a one. Prices therefore remain about the same as last week, viz.: 1.90¢ @ 2¢ for Ordinary Plates and Tank Plates, 2.1¢ @ 2.2¢ for Universal Plates; Shell, 2.4¢ @ 2.5¢; Flange, 3.5¢; Fire-Box, 4¢; Steel Plates, Tank and Ship Plate, 2.15¢ @ 2.25¢; Shell, 2.7¢; Flange, 3¢ @ 3 1/4¢; Fire-Box, 3 1/2¢ @ 4 1/2¢.

Structural Iron.—A moderate amount of miscellaneous orders have been received, but nothing of much importance. Bridge-work is likely to be on the market in the course of a week or two to the extent of 8000 or 10,000 tons, while shipbuilders' and architects' requirements are sure to be large; but in the meantime prices are weak and orders sharply competed for. Quotations are ordinarily about as follows: Bridge Plate, 2¢ @ 2.1¢; Angles, 2¢ @ 2.1¢; Tees, 2.4¢ @ 2.6¢; Beams and Channels, 2.8¢ for Iron or Steel.

Sheet Iron.—There is quite a good demand for Thin Sheets, and some of the leading mills are full of orders for this class of material. Thick Sheets are comparatively dull, but prospects are thought to be favorable for the spring trade. Prices about as follows for small lots:

Best Refined, Nos. 26, 27 and 28....	3 @ 3 1/4¢
Best Refined, Nos. 18 to 25....	2 1/2 @ 3 ¢
Common, 1/2¢ less than the above.	
Best Bloom Sheets, Nos. 26 to 28....	4 1/4 @ 4 3/4¢
Best Bloom Sheets, Nos. 22 to 25....	3 1/4 @ 4 ¢
Best Bloom Sheets, Nos. 16 to 21....	3 1/4 @ 3 1/2¢
Blue Annealed.....	2.6 @ 2.8¢
Best Bloom, Galvanized, discount.....	62 1/2 %
Common, discount.....	67 1/2 %

Steel Rails.—The market is extremely quiet, but there is a growing impression among manufacturers that the business of 1889 will be very much larger than that of the preceding year. Sales to date are about 25 % larger than in 1888, and the increasing number of inquiries betokens a good deal of business before long. Prices are still somewhat unsettled, but from \$27.50 to \$28 may be regarded as firm quotations in this market.

Old Rails.—Prices are almost nominal as regards this market, as no one seems inclined to pay the high figures asked for the lots that are in store, say, \$24.50 and upward. Sales have been made at from \$24 to \$24.75 for lots delivered to mills a little outside the city, but in view of the low prices quoted in Western markets, buyers are taking only small lots to cover immediate requirements.

Scrap Iron.—The demand is rather slow, and quoted prices not paid with much freedom: \$20 @ \$20.50 for cargo lots; \$21 @ \$21.50 for carload lots, delivered, or for choice \$22; No. 3 do., \$14 @ \$15; Turnings, \$13 @ \$14; Old Steel

Rails, \$20 @ \$21; Cast Scrap, \$15 @ \$16; do. Borings, \$9 @ \$10; Old Fish Plates, \$23 @ \$24; Old Car-Wheels, \$17 @ \$18, Philadelphia.

Wrought Iron Pipe.—The demand is fair, with unusually good prospects for large Pipe later on. There are some very important matters under consideration, which, if carried out, will give plenty of work during the spring months. Discounts, in a general way, are about as follows: Butt-Welded Black, 55 %; Lap-Welded Black, 65 %; Butt-Welded Galvanized, 45 %; Lap-Welded Galvanized, 55 %; Boiler Tubes, 62 1/2 %.

Nails.—The demand is very light, but there is increasing steadiness in prices, and it is expected that the agreement to restrict production will soon be put into effect. Stocks are decreasing, and prices are steady at \$1.90 @ \$2 for lots from store, with the usual concessions on carload lots.

Edmund D. Smith & Co., 222 South Third street, have been appointed the exclusive sales agents for the Catocin Furnace Company, of Maryland, whose furnaces will again go into blast probably this month. "Catocin" Iron is one of the oldest and best-known brands of Pig Iron in this section, and the United States Government has numerous times stipulated for this make in its specifications for castings. They run entirely on their own ores.

Pittsburgh.

Office of *The Iron Age*, 77 Fourth Ave.,
PITTSBURGH, February 19, 1889.

Some of the brokers report an increased inquiry, which is usually followed by an increased business, and the indications are that a great many orders will be placed within the next week or two. Within the past few days some of the mills have been started up single turn.

River navigation, after having been suspended for a couple of weeks by ice, has been resumed, and large shipments of all kinds of manufactured goods made. The shipments of Glassware have been unusually large of late, and mostly for the South. It may be stated here that the Glass factories are nearly all in full blast.

The river coal trade continues in bad condition, owing to the markets below being overstocked and very dull, and the prospect for improvement soon is not as encouraging as it might be. The Grand Lake Coal Company, one of our largest river companies, made an assignment within the past week. The liabilities are placed at \$250,000. The Grand Lake Company sold nearly all their coal at New Orleans; and in addition to having a good deal of bad paper, lost heavily by the storm at New Orleans some time ago, having had, according to report, some 500,000 bushels of coal sunk. It is understood that the banks here will lose heavily.

Pig Iron.—In regard to prices there has been no notable change since our last report. Rumors obtain of sales at a further decline, but they are not well authenticated. Bessemer Iron appears to be stronger. There are now but few, if any, sellers under \$16.50, cash, whereas there was a sale a couple of weeks ago at \$16.25, cash. We quote as follows:

Neutral Gray Forge.....	\$14.25 @ \$14.50, cash.
All Ore Mill.....	15.50 @ 15.75, "
White and Mottled.....	13.50 @ 14.00, "
No. 1 Foundry.....	16.25 @ 16.50, "
No. 2 Foundry.....	15.50 @ 15.75, "
No. 1 Charcoal Foundry.....	23.00 @ 23.50, "
Cold Blast Charcoal	25.00 @ 28.00, "
Bessemer Iron	16.50 @

The only sales of Bessemer reported were 500 tons at \$16.40 and 1000 tons at \$16.50.

Muck Bar.—There is little or nothing doing, and in the absence of sales we quote nominally at \$26.50 @ \$27, cash. Sellers generally are asking \$27, cash, and some of them intimate that they would not if they had advance cut under that price.

Spiegel.—Spiegel is quoted at \$28 @ \$28.50 for 20 %, and Ferromanganese at \$56 @ \$57 for 80 %.

Manufactured Iron.—There has been more inquiry the past week, and some large contracts are reported as having been closed; prices, however, continue easy, in sympathy with the raw material. We quote: Bars at 1.70¢ @ 1.75¢; Plates, 2.15¢ @ 2.20¢; No. 24 Sheet, 2.70¢ @ 2.80¢; Skelp Iron, 1.75¢ @ 1.80¢ for Grooved, and 2¢ @ 2.10¢ for Sheared—all 60 days, 2 % off for cash.

Wrought-Iron Pipe.—There is but little change to note in regard to the Pipe trade; there is a very fair business for this season of the year, but continued complaint in regard to prices, which are both irregular and unremunerative. It is difficult to quote prices in the unsettled condition of the market, as each firm make their own prices, and, with a sharp competition, whoever gets the business has to take it so low that there is nothing in it. Discounts are generally quoted as follows: On Black Butt-Welded Pipe, 55 and 5 % @ 57 %; on Galvanized do., 50 and 5 %; on Black Lap-Welded, 65 % @ 67½ %; on Galvanized do., 55 and 2½ %; Boiler Tubes, 65 %; 2-inch Tubing, 11¢ @ 12¢ ½ foot; ¾-inch Casing, 35¢ ½ foot.

Nails.—The Nail trade is improving somewhat, but far from being active, or what it should be at this season of the year; a couple of factories here are in operation, Jones & Laughlins and Chess, Cook & Co., but they are not running up to anything like their full capacity. Schoenberger & Co. have made no Nails for several months. Prices remain unchanged, and we continue to quote 12d to 40d at \$1.90, 60 days, 2 % off for cash.

Old Rails.—There have been no sales reported recently, in the absence of which we quote American Tees at \$23 @ \$24; sales, it is claimed, have been made as low as \$23, while some holders are asking \$24. Some of our best-informed brokers are of the opinion that just as soon as consumers commence to buy the market will do better, as the stock, both in first and second hands, is light. Rails are worth about as much at the seaboard as they are here, and as long as they cannot be imported from the other side, there is not likely to be much of an increase in stocks at the seaboard. Unlike almost everything else, the supply is growing less and less every year, as there are no new Iron Rails being made.

Steel Rails.—Heavy Sections are quoted for small lots at \$28 @ \$28.50, cash, but a large order could no doubt be placed considerably below the prices quoted.

Billets, &c.—Bessemer Steel Billets are dull and prices weak; sales reported at \$27.75 @ \$28. Owing to the continued dullness in the Nail trade, there is no demand for Nail Slabs, which may be quoted at \$27.50; Domestic Bloom Ends, \$17.50; and Domestic Rail Crops, \$18.50. No sales reported recently.

Merchant Steel.—There is an increasing demand, and the market is firmer, but prices remain as last quoted. Best brands of Tool Steel, 8½¢; Crucible Spring Steel, 4½¢; Crucible Machinery, 5¢; Open-Hearth do., 2½¢.

Railway Track Supplies.—Business continues light, but an improved demand is looked for soon, as there usually is at this season of the year. No change in prices. Railway Spikes, 2.10¢, 30 days; Splice Bars, 1.85¢ @ 1.90¢; Track Bolts, 2.75¢ with Square and 2.85¢ with Hexagon Nuts.

Old Material.—Trade in all kinds of Old Material continues light, but an improvement is looked for soon, as stocks in hands of consumers generally are light. Prices remain about the same as a week ago. No. 1 Wrought Scrap, \$20 @ \$20.50, net ton; Wrought Turnings, \$13 @ \$13.50; Car Axles, \$24 @ \$25; Cast Scrap, \$14.50 @ \$15, gross; Old Car-Wheels, \$19; Cast Borings, \$11 @ \$12, gross.

George H. Wrightman, formerly secretary of the Hartman Steel Company, Limited, has been appointed Northeastern agent for Carnegie, Phipps & Co., Limited, of Pittsburgh, with headquarters at No. 3 Mason Building, Boston.

Chicago.

Office of *The Iron Age*, 65 and 67 Washington street, CHICAGO, February 18, 1889.

Pig Iron.—The depth of the depression seems to be over, at least in this market. Pig Iron has been purchased very freely and prices are no longer as weak as they were. In fact, advances have been made on quite a number of brands of 25¢ to 50¢ ½ ton. Southern Irons are not so abundant as they were, and the few brands available from the South are said to be held very firmly at the higher rates asked. The dealers report that almost everybody using Pig Iron has been purchasing within the past two weeks; they seem to be disposed to buy at least the minimum that they will need this year. So many of them have done this that sellers are fearing that in a couple of months there will be no buying at all, and that prices will then drop again, unless business in finished products increases so that much more Iron will be needed than now seems probable. It must be said that in some lines, notably among architectural Iron works, the prospects are very bright for a great deal more work than was done last year. The railroads are buying so little at present that it seems almost inevitable that they must very heavily later in the year, and that the Pig Iron market will be well sustained. The manufacturers of Lake Superior Charcoal Iron are finding an accumulation of Nos. 1 and 2 and are disposed to make slight concessions on these numbers, which has imparted an appearance of weakness, which is a new feature with this class of Iron, as it has been so strongly held hitherto. Cash quotations are as follows, f.o.b. Chicago: Lake Superior Coke, No. 1, \$16 @ \$17; No. 2, \$15 @ \$16; No. 3, \$14 @ \$15; Chicago Scotch, No. 1, \$17.50; American Scotch (Blackband), No. 1, \$18.50 @ \$19.50; Jackson County Silvery, No. 1, \$18; other Ohio Soft Irons, No. 1, \$17.50 @ \$18.50; Lake Superior Charcoal, Nos. 1 and 2, \$19.50 @ \$20; Tennessee Charcoal, No. 1, \$19; No. 2, \$18.50; Southern Coke, No. 1, Foundry, \$16.50; No. 2 Foundry and No. 1 Soft, \$15.75 @ \$16; No. 3 Foundry, \$15.25 @ \$15.50; Gray Forge and No. 2 Soft, \$14.75 @ \$15.

Bar Iron.—The prospect is a little brighter, orders being more numerous than they were and inquiries widening very considerably. The demand seems to be coming from the smaller manufacturing consumers, who are evidently experiencing a heavier demand for their products. Prices are slightly easier and quotations are now about 1.67½¢, half extras, f.o.b. Chicago, for carload lots of good quality Common Iron. Slight concessions are made on this rate for large orders, but manufacturers are disposed to resist attempts to force prices down very considerably. A peculiarity of the present market seems to be the firmness with which a bottom rate is made, as it sometimes occurs that under such conditions as have recently prevailed a very weak seller can be found who will drop his quotations much below those of any of his competitors. Small lots from store are being sold at

1.80¢ @ 1.90¢ for Common Iron, and up to 2.10¢ for Iron of better quality, in small lots.

Structural Iron.—As reported last week, trade is beginning to move a little, but not much activity is expected in this line until March or April. Mill lots are quoted as follows, f.o.b. Chicago: Angles and Sheared Plates, 2.10¢ @ 2.12½¢; Universal Plates, 2.15¢; Tees, 2.55¢ @ 2.60¢; Beams and Channels, 2.90¢. Small lots from store are available at 2.35¢ for Angles, 2.70¢ for Tees, and 3¢ @ 3.40¢ for Beams and Channels.

Plates, Tubes, &c.—A very fair business has been transacted during the week, including quite a number of carload orders. The Boiler shops are now well filled with work, and enough business is in sight to keep them well employed all summer. The dealers in Plates, consequently, feel very cheerful over the prospect. Boiler Tubes are regarded as a very good purchase at present prices, manufacturers' agents here believing them now to be at bed rock prices. Small lots from store are quoted at the following rates: Sheet Iron, Nos. 10 to 14, 2.50¢; Sheet Steel, 2.75¢; Tank Iron, 2.40¢; Tank Steel, 2.60¢ @ 2.75¢; Shell Iron, 3¢; Shell Steel, 3.12½¢; Flange Iron, 4¢; Flange Steel, 3.50¢; Fire-Box Steel, 4.75¢ @ 5.75¢; Boiler Rivets, 4¢ @ 4.25¢; Ulster Iron, 3.75¢; Boiler Tubes, 62½ % @ 65 % off.

Sheet Iron.—Manufacturers' agents are selling a great deal more Galvanized Iron than last week. The demand is very general, including the cornicemen, car builders, and even the railroads to some extent. Prices of small lots are unchanged at 65 % off for Juniata and 65 % and 2½ % off for Charcoal. Black Sheets are a little weaker, without quotable change in prices, being nominally held at 3.30¢ for No. 27 Common from store and 2.95¢ @ 3¢, f.o.b. Chicago, for small lots.

Merchant Steel.—A fair trade is reported, but no large orders have recently been placed. Quotations are as follows, the lowest prices being for large lots: Soft Steel Bars, 2.10¢ @ 2.30¢; Tool Steel, 7.75¢ @ 8.50¢; Specials, 13¢ @ 25¢; Crucible Spring, 3.75¢; Open-Hearth Spring, 2.20¢ @ 2.50¢; Open-Hearth Machinery, 2.30¢ @ 2.50¢; Tire, 2.20¢ @ 2.50¢; Sheet, 7¢ @ 10¢.

Steel Rails.—Not much business has been transacted since our last report. The orders then in sight are still hanging, and the manufacturers are not feeling particularly bright over the future. Quotations are still \$30 @ \$30.50, according to quantity.

Old Rails and Wheels.—It seems probable now that bottom has been reached, for the present, in Old Iron Rails. Sales have been made at \$20, but other parties willing to buy at this price have not succeeded in securing the Rails. Some sales were made at slightly higher figures toward the close of the week, and it is believed that \$20.50 is now about the price which they are worth. Old Steel Rails have been sold at \$15 for pieces under 3 feet and \$18 @ \$20 for longer lengths, according to their condition. Old Car-Wheels are, nominally, worth \$19.

Scrap.—Material is not so plentiful as it was, and dealers are disposed to maintain quotations. The demand is only for small lots, and market is not being forced to take more. Mixed Country Scrap is still worth \$14. Quotations to consumers are as follows, ½ ton of 2000 lb: No. 1 Railroad Shop, \$20; Track, \$18 @ \$19; No. 1 Mill, \$14 @ \$15; Pipes and Tubes, \$13 @ \$14; No. 2 Mill, \$9; Axles, \$25; Horse-shoes, \$18 @ \$19; Machinery Cast, \$13.50 @ \$14; Stove Plate, \$11; Cast Borings, \$8.50; Wrought Turnings, \$11 @ \$12; Axle Turnings, \$13.50; Mixed Steel, \$11; Coil and Leaf Steel, \$15; Tires, \$15.

General Hardware.—The demand for Shelf Hardware is very fair and business is improving. While the first half of the month was not particularly rushing, the demand is considerably better now. Orders are coming in pretty rapidly for spring delivery, and the prospects are bright for a good trade later in the season. It is a peculiarity of some sections of the country that the merchants take stock in February, and that naturally restricts business somewhat during this month. No special changes have taken place in prices except a slight decline in Silver-Plated goods and also in Carriage Bolts, but while some lines are thus off a little, others are stiffening, and a general impression prevails that on the whole prices will be higher, rather than lower, and that now is a very safe time to buy goods. There is no chance for speculation, but simply for good business investment. The demand for Heavy Hardware continues good and the merchants are feeling much more cheerful than they were the latter part of last year. Collections are very good.

Nails.—The condition of the Steel Nail trade is about as it has been. Manufacturers' agents are very firm and refuse to make concessions, but jobbers are occasionally cutting the price for small lots when they can accomplish a purpose by so doing. The regular quotations by jobbers is \$2 for carloads and \$2.05 for small lots. The manufacturers of Wire Nails are no firmer than they have been, and jobbers' prices are still receding. Carload lots or mixed carloads can be bought at \$2.35, while \$2.45 is still the regular price for small lots.

Barb Wire.—A very good demand is reported, but prices are no stronger; in fact, the manufacturers do not seem to be trying to advance rates. The fight which has been prosecuted with more or less vigor for the last few years between those who draw their own Wire and those who purchase Wire is being pushed more bitterly than ever, and it is possible that prices will not improve until the trade has passed into fewer hands. The attitude of the manufacturers has pushed jobbers' prices down, and \$2.75 is now named for carloads or mixed carloads and \$2.85 for small lots. Galvanized Wire is offered at 60¢ per 100 lb in advance of these quotations.

Pig Lead.—Prices have declined to 3.45¢ under sales of 500 tons for delivery in February and March, with manufacturers claiming to be well supplied for at least 60 days. There is a growing feeling that present prices are low and comparatively safe, but buyers are apathetic at present.

Chattanooga.

Office of *The Iron Age*, Carter and 9th Sts.,
CHATTANOOGA, February 18, 1889.

Pig Iron.—The situation is but little removed from that reported last week; there is a firmer feeling prevailing, although prices have undergone but little change. Sales are very active, which has resulted in much larger amounts changing hands than usual and there is not the supply on the market that there was a few weeks ago. Southern consumers are buying quite heavily, much more so than usual; in fact, it appears to be the general feeling among all consumers, North and South, that now is the time to lay in stocks for the next few months, and it is very largely being acted upon. What the effect of the storage and warrant system will in the future have upon the prices of Pig Iron yet remains to be seen—as yet the workings of it are not perfected. There seems to be somewhat of a difference of opinion expressed as to the effect upon prices. There are those who think that the storage of large amounts of Iron which is ready for delivery

at any moment will act as a menace to speculation and lead to an advance in prices. Should the furnaces rely upon this avenue of placing their product to a considerable extent, and this may withhold it from the market, it can hardly do otherwise than stiffen up the market to some extent and perhaps place it more on a conservative basis. This appears to be about the general opinion of those who have expressed themselves upon the subject. The question will eventually solve itself in this way. Should production continue to be greater than the consumption and stocks continue to accumulate in the different storage yards, there would be less danger from an extreme depression in prices, as has occurred in times gone by. It will give more time for the less-favored stacks to close up their business without such sacrifice as might otherwise occur. Upon the whole, the subject is being looked upon as a sort of balance-wheel that will act as a regulator of the Pig Iron business.

Cincinnati.

Office of *The Iron Age*, Fourth and Main Sts.,
CINCINNATI, February 18, 1889.

Pig Iron.—Confidence has gained ground in the local market during the week, and a fair volume of business has been transacted. Statistics show that there is very little accumulation of Iron now, and that production has been reduced to within a close proximation of consumption. Such conviction has given a stronger feeling to producers, and their feeling has been more generally communicated to buyers, who have acted upon such information as is reflected in the demand, which has been well distributed. No large individual sales have been reported, the largest being for 1500 tons No. 1 Southern Foundry at \$15; some have been reported sold at \$15.25. But while foundry grades have sold moderately well, the demand has been more for Forge Iron, 1000 tons Gray Forge selling at \$13, 1000 do. at \$13.25 and 1000 tons Mottled at \$12.50, cash; other lots of Mottled have sold at \$12.25. For Car-Wheel Iron the demand has been active, 5000 tons Southern reported sold on basis of \$25; moderate amounts of Lake Superior Car-Wheel have sold at \$21.50, spot. It is reported that present shipments from Southern furnaces are the largest on record. Generally speaking, a stronger tone prevails, with higher prices asked and obtained in some instances. The following are the approximate prices current here at the close for cash, f.o.b.:

Foundry.

Southern Coke, No. 1 (new classification).....	\$15.00 @ \$15.50
Southern Coke, No. 2 (new classification).....	14.50 @ 14.75
Southern Coke, No. 3 (new classification).....	14.00 @ 14.25
Ohio Soft Stone Coal, No. 1.....	15.00 @ 16.00
Ohio Soft Stone Coal, No. 2.....	14.50 @ 15.00
Mahoning and Shenango Valley.....	16.50 @ 17.00
Hanging Rock Charcoal, No. 1.....	21.00 @ 22.00
Hanging Rock Charcoal, No. 2.....	19.00 @ 20.00
Tennessee and Alabama Charcoal, No. 1.....	18.00 @ 18.50
Tennessee and Alabama Charcoal, No. 2.....	17.00 @ 18.00

Forge.

Strong Neutral Coke.....	13.00 @ 13.50
Mottled Neutral Coke.....	12.35 @ 12.75
Gray Forge.....	13.00 @ 13.25

Car-Wheel and Malleable Irons.

Southern Car-Wheel.....	20.00 @ 25.00
Hanging Rock, Cold Blast.....	22.00 @ 25.00
Lake Superior Car-Wheel and Malleable.....	21.00 @ 22.00

Manufactured Iron.—Generally speaking, the market has been slow, but a few mills have been well supplied with orders, and prices have changed but little.

Nails.—The market has remained quiet and easy, without essential change in prices: 12d @ 40d sell at \$1.90 @ \$1.95 per keg, with 10¢ rebate in carload lots at the mills. Steel Nails sell at \$1.90 @ \$1.95, and Steel Wire Nails at \$2.60 @ \$2.65 per keg.

Old Material.—There has been a moderate demand for Old Rails, with small sales on line of O. & M. R. R. at \$21.50, cash; holders ask \$22 at the close, but buyers hold off. There have been small sales of old Wheels at \$18 @ \$18.50 per ton, spot.

Birmingham.

BIRMINGHAM, ALA., February 18, 1889.

Pig Iron.—While prices in Iron remain practically unchanged, the feeling is confident and expectation of better things almost buoyant. The money market is easier than for some years, and from what the bank authorities say, it will be fair enough sailing for any legitimate business here for some time. The fact that after the stress of reaction from the boom has done its worst, the large majority of property here is utterly unencumbered, gives great encouragement to those who offer money, and they are more than ready to lend it on reasonable security. The Hull storage scheme has recently been much discussed, but the opinions arrived at are conflicting. One furnaceman said to your correspondent he thought it will help the furnaces by keeping up the price of Iron; that if any of them become hard up they could get an advance which would enable them to tide over the pressure. Another's theory was that the lower the prices the better the chances for the advancement of this district, and Birmingham could afford to be independent of the storage schemer. The fact was pointed out that during the depression some years ago the few Birmingham furnaces in operation went along without cessation or embarrassment, and so it is held they will always do in any ordinary contingency. The district, that is including all North Alabama, is distinctly looking up. Progress has been largely made in mixing better grades, both of Coal and Iron Ore. Sheffield by this will be particularly benefited. The furnace at Trussville, this county, to which another will soon be added, will use Coke made from a Murphree's Valley vein of Coal, about 25 miles north of here. The operators who have worked the Pennsylvania Connellsville Coal say this Alabama Coal will make fine clear Coke, as good as can be produced anywhere in this country. The Sheffield people have been getting Coke from West Virginia until recently. Now they are beginning to receive consignments from new ovens in the Warrior Coal fields at Jasper, Walker County, about 40 miles south. There has been no break since the last report in the way of smooth operations in the district. One of the new furnaces at North Birmingham of the Sloss Steel and Iron Company will go in blast during the week.

Cleveland.

CLEVELAND, February 18, 1889.

Iron Ore.—None of the big mining companies has fixed prices, although there is no material difference of opinion as to what these prices will be eventually. Quotations for 1889 can be estimated almost to a certainty. Non-Bessemer Ores will bring 40¢ more per ton than was paid at the beginning of last season, and Bessemer Ore from 25¢ to 35¢ more. One heavy consumer, when offered Bessemer Ore at 40¢ advance over last year's quotations, promptly offered to pay 30¢, leaving a difference of but 10¢ per ton between the mine owners and the furnacemen. The Ore men are encouraged just at present by reports of increased demands for Steel Rails and Bessemer Iron, and a heavy buying movement is expected to follow the first announcement of quotations. It is said that 200,000 tons of Ore could be quickly disposed of now on the docks. Instead of this amount, there are less than

35,000 tons of unsold Ore to be obtained, and this is rapidly disappearing. A small lot of non-Bessemer Hematite Ore already on the docks is said to have sold for \$4.10 per ton during the past week. It is now confidently believed that several of the largest mining companies will fix prices within the next ten days.

Pig Iron.—The market has improved in tone. Three or four large manufacturers report a strong demand for Bessemer Iron, and it is thought that the tide has at last turned in the direction of the seller. A number of furnacemen have announced their intention of refusing to make additional concessions, despite rumors to the effect that Mill Iron has sold as low as \$15.25, cash, during the week just closed. Foundry Iron has also been reported a point or two lower, but only scattering and unimportant sales at the reduced figures have occurred. The outlook, as a whole, is decidedly more hopeful and an active buying movement is looked for early in March. A good deal of Iron is unquestionably going into consumption.

Old Rails.—A 1000-ton lot of Old American Rails was offered during the past week at \$21.80, and \$21.50 is probably a fair quotation.

Louisville.

LOUISVILLE, KY., February 18, 1889.

Pig Iron.—There has been no noticeable change in the market during the past week, and prices of Iron still remain at very low figures. Several furnaces have withdrawn from the market, and refuse to sell at present prices, seeming to think that the market must show some improvement in the next 60 days. Foundry Irons sold last week at remarkably low prices, making the prospect look almost as discouraging as ever, excepting that the movement taken by some furnaces in withdrawing from the market may cause better prices. It seems to be the universal opinion of Pig-Iron men that the market will show a change for the better in the near future. We quote for cash as follows:

Southern Coke, No. 1 Foundry, new classification.....	\$14.75 @ \$15.25
Southern Coke, No. 2 Foundry, new classification.....	14.25 @ 14.75
Southern Coke, No. 3 Foundry, new classification.....	13.75 @ 14.25
Gray Forge.....	13.25 @ 13.75
White and Mottled, different grades.....	12.75 @ 13.25
Silver Gray, different grades.....	13.00 @ 13.50
Southern Charcoal, No. 1 Foundry.....	16.25 @ 16.75
" " No. 1 Mill.....	14.75 @ 15.25
Southern Car-Wheel, standard brands.....	21.75 @ 22.75
Southern Car-Wheel, other brands.....	18.00 @ 19.50
Hanging Rock Coke, No. 1 Foundry.....	15.50 @ 16.00
Hanging Rock Charcoal, No. 1 Foundry.....	19.50 @ 21.00
Hanging Rock, Cold Blast.....	20.75 @ 23.75

St. Louis.

OFFICE OF *The Iron Age*, 212 N. Sixth st.,
ST. LOUIS, February 18, 1889.

Pig Iron.—Shows little or no change, either as regards price or demand, from last week's report. While it is true a number of furnaces in the South have blown out, and others advanced their prices, yet consumers show no disposition to provide for future requirements, and are only in the market to supply the present needs, and seem to think that prices will be all right when they are in a position to become purchasers for future wants. Sales are for small lots, and large buyers seem to be out of the market, for the time being at least. We quote as follows, for cash, f.o.b. St. Louis.

Southern Coke, No. 1 Foundry, \$15.25 @ \$15.75	
Southern Coke, No. 2 Foundry, 15.00 @ 15.25	
Southern Coke, No. 3 Foundry, 14.25 @ 14.75	
Gray Forge.....	13.50 @ 13.75
Ohio Softeners.....	17.50 @ 20.00
Lake Superior Charcoal.....	21.00 @ 21.50

Missouri.

Charcoal Foundry, No. 1.....	16.00 @ 16.50
Charcoal Foundry, No. 2.....	15.00 @ 15.50

Tennessee.

Charcoal Foundry, No. 1.....	17.50 @ 18.50
Charcoal Foundry, No. 2.....	16.75 @ 17.50
Connessville Coke, f.o.b. East St. Louis, \$4.70; St. Louis, \$4.85.	

Bar Iron.—There is no demand to speak of, and small orders are the rule, while large lots still remain "in the near future." The outlook is improving, however, and a number of inquiries have been received for some good round lots, which, if prices are satisfactory, will be closed during the coming week. Irregularity in prices continues and it is difficult to quote with any degree of accuracy, as concessions are frequently made on orders for desirable specifications. Small lots from store are quoted at 1.85¢ @ 1.90¢, according to quantity and quality.

Barb Wire.—The volume of business continues large, and mills are well filled with orders, so much so that in some instances they are a week or ten days behind their orders. Prices show no improvement. Manufacturers think, however, that with the assistance of the spring demand the chances are favorable for some advance over the prices now ruling, which are as follows: Carload lots, Two and Four Point Painted, \$2.90; carload lots, Two and Four Point Galvanized, \$3.50, f.o.b. St. Louis; less than carload lots, 5¢ additional.

New York.

Office of *The Iron Age*, 66 and 68 Duane street.
NEW YORK, February 20, 1889.

American Pig.—The market is moderately active, and while some authorities in the trade note a slight improvement, facts are continually cropping up, which give the market an appearance of irregularity. Pressure to sell comes from various quarters, both North and South, in foundry and forge grades, and, although the quantities thus thrust upon the market are not large, the fact that low figures are accepted tells. It should be noted, however, that in some cases a small lot is put into so many hands to sell that the impression is created among buyers that large amounts are urgently offering. We hear of concessions in exceptional instances in Gray Forge and in No. 2 Foundry, and are informed that No. 1 can be purchased at \$17.50 for Standard Northern makes; White Southern Iron is still available at \$17 for No. 1. Standard Northern No. 2 can be purchased at \$16.25. The discrepancy between quotations at leading Western points and in the East, on Southern Iron has attracted attention. Taking \$14.75 at Cincinnati for No. 1, and adding the difference in freight, \$1.11, an equivalent of \$15.86 is reached. This is \$1 below the quotations made by Southern furnaces in this section. The only explanation offered thus far is that Southern representatives have not cut deeply because they have feared sharp retaliatory measures by Northern furnace companies. It would seem improbable that so great a disparity could long exist, however, and so long as there is not a marked advance in the West, Southern Iron will be a very serious menace to prices in this section. We quote standard Northern No. 1, \$17.50 @ \$18; No. 2, \$16.25 @ \$17.00, and Gray Forge, \$15 @ \$16, all at tidewater.

Scotch Pig.—We quote: Coltness, \$20.50 @ \$21; Shotts, \$20 @ \$20.50; Langloan, \$20 @ \$20.25; Summerlee, \$20.25 @ \$20.50 and Dalmellington, \$19.25 @ \$19.50.

Spiegeleisen.—We note sales of about 2000 tons of Foreign 20 % at \$26.75 ex-ship

and a small quantity of Domestic 10 to 12, @ \$22.50, delivered at mill in Eastern Pennsylvania.

Plates.—We quote Iron Tank, 2¢ @ 2.2¢; Shell, 2.25¢ @ 2.4¢; Steel Tank and Ship Plate, 2.15¢ @ 2.25¢; Shell, 2.35¢ @ 2.5¢; Flange, 2.6¢ @ 2.75¢, and Fire-box, 3¼¢ @ 4¢.

Structural Iron.—We quote Sheared, Plates, 1.9¢ @ 2¢; Universal Mill Plates, 2¢ @ 2.1¢; Angles, 2¢ @ 2.10¢; Tees, 2.4¢ @ 2.6¢, and Channels and Beams, 2.8¢ on dock for all sizes.

Bar Iron.—We quote: Carload lots on dock, half extras, Common, 1.65¢ @ 1.75¢; Medium, 1.75¢ @ 1.8¢, and Refined, 1.8¢ @ 2¢.

Steel Rails.—The report of the Board of Control for the 1st of February shows that the sales by the mills to that date aggregated 494,441 tons this year, against 394,897 tons reported up to the same time a year ago. This shows an increase of 100,000 tons. We are convinced that now the orders aggregate at least 650,000, the total allotment being 777,968 tons. The shipments in January were only 64,352 tons, of which 41,374 tons were from two mills. Eight works shipped less than 2000 tons each, and six less than 100 tons. The returns of the Board of Control are particularly interesting from the point of view of the territorial distribution of orders. The Eastern mills, which includes the Pennsylvania, Bethlehem and the two Scranton mills, report sales of 213,978 tons; the Pittsburgh district, including Edgar Thomson and Cambria, have 173,640 tons. The Allegheny Bessemer, which does not report, may carry this to 200,000 tons. The three Chicago mills—the North Chicago, Union and Joliet—have, together, 108,823 tons. The same Eastern mills shipped last year 471,747 tons. The two Western Pennsylvania mills shipped 221,309 tons, and the Chicago group 402,636 tons. It will be noted how greatly the Chicago mills have suffered through the deplorable condition of the Northwestern railroads. Practically the great systems upon which they are dependent have not bought even a fraction of their requirements. Altogether there have been few large purchases. The following list embraces all the sales upward of 10,000 tons thus far: Pennsylvania Railroad, 51,148 tons; Union Pacific, 17,000; Erie, 20,000; Pacific Improvement Company, 10,000; Alabama Terminal, 14,123; Chicago, Burlington and Quincy, 11,250; Lackawanna, 10,000; Fort Worth and Rio Grande, 10,000; M. Kennedy, 13,558; S. Kneeland, 12,335; Lake Shore, 12,000; Lehigh Valley, 10,502; Lynchburg and Dunham, 10,000; Missouri, Kansas and Texas, 12,990, and Missouri Pacific, 15,000 tons. The absence of many large systems is noteworthy. The relative position of the three groups of works alluded to in the above has an important bearing in the markets. With possibly one exception, the active mills in the East have business enough to last them for a considerable period. Relatively speaking, they and two of the Pittsburgh mills are sufficiently well supplied with orders to be somewhat indifferent. So far as we can learn, none of the Eastern mills would now accept \$26, which was taken some weeks since. The majority ask \$27 or more, and it is very doubtful whether any lower offer would be entertained.

Old Rails.—We note a sale of 300 to 400 tons of American Tees, for delivery at Norwich at \$22 delivered.

Track Material.—There have been sales of round lots of Spikes, which we quote 2¢ @ 2.10¢. Angles remain weak at 1.80¢ @ 1.85¢, while Bolts and Square Nuts are quiet at 2.65¢ @ 2.75¢.

Financial.

The financial and business outlook has not distinctly improved during the week, although the tone is cheerful on all sides in prospect of more activity at an early day. Several important interests are affected by pending negotiations concerning railroad management and transactions are held in abeyance. Complaint comes from Chicago of much trouble in east bound freight cases from under-billing, false invoicing and other irregular practices, and a reduced margin of profit is advised, so that the indirect and weak lines shall be depressed of their opportunities. Taken together, the exhibit of gross earnings of railroads for January is much more favorable, contrasted with a year ago. The movement of cotton this year is in much larger volume. Commissioner Cooley, speaking of the railroad presidents' agreement, says: "The act to regulate traffic is, on the whole, conservative and beneficial, and its most vigorous provisions cannot inflict upon carriers subject to it so much mischief as the managers voluntarily bring upon themselves by the old abuses of these rate wars." All of the business exchanges will be closed on Friday next, Washington's Birthday.

The Stock Exchange markets were generally strong and active. Much uncertainty was caused by the attitude of the "Q" managers in reference to the agreement of the Interstate Railway Association, which was understood to have for its object the renewal of investments in the extension of Western roads. On Tuesday night President Adams was inclined to believe that all the signatures would be obtained. The same day, in this city, the Trunk line presidents agreed not to continue joint rate or other traffic arrangements with any connecting roads engaged in manipulations and devices which clearly violate recent agreements and the Interstate Commerce law. On Thursday B. & Q. advanced on the news that a quarterly dividend of 1 per cent. had been declared. On Monday a decline in St. Paul and other grangers was attributed to the refusal of the Iowa Railroad Commissioners to substitute the Illinois tariff for their own. On Tuesday the market was dull awaiting news from Chicago. The engagement of \$500 in gold for export had no effect. Jay Gould retired from the Board of Directors of the Delaware, Lackawanna and Western, owing to his health. The stockholders of the Bethlehem Iron Company voted to increase the stock from \$2,000,000 to \$3,000,000.

Government bonds are quoted as follows:

U. S. 4½, 1891, registered.....	107½
U. S. 4½, 1891, coupon.....	109
U. S. 4s, 1907, registered.....	123¾
U. S. 4s, 1907, coupon.....	123¾
U. S. currency 6s.....	120

The total amount of bonds purchased to date under the circular of April 17 is \$117,668,450, of which \$51,337,300 were 4 per cents. and \$66,331,150 were 4½ per cents. The cost of these bonds was \$137,723,889, of which amount \$65,925,899 was paid for the 4 per cents, and \$71,797,990 for the 4½ per cents.

The weekly statement of the associated banks showed heavy gains resulting from bond purchases by the Government, as well as from receipts of currency, chiefly from the South. There was consequently a decrease of \$3,142,000 in surplus reserve, which now stands at \$17,293,000, against \$17,937,000 in 1888, and \$15,500,000 in 1887. Loans were slightly contracted. Specie increased \$3,715,400, and legal tenders \$200,700. Loans and deposits are now near the maximum, as compared with any former period.

Money is easy. Rates are 3 % for 60 days, 3½ and 4 % for 90 days and four

months, and 4 and 5 % for longer dates. There is no change of importance in commercial paper, which is in good demand, and some banks are buying which have not been in the market for a long time. The market for sterling is firm at \$4.87 @ \$4.89½, to which point rates were advanced on Friday, so that it is not unlikely gold may be shipped profitably as an exchange operation for the first time in two years.

The exports from this port continue to show an increase as compared with last year. The total for the week ending today was \$7,798,498, cotton figuring very largely in the shipments. For the corresponding week of 1888 the exports were \$5,472,458.

General trade is quiet, but fully holds its own, compared with one week ago. The aggregate clearings of 42 cities show an increase of 28.5 %. Outside of New York the increase was 15.6 %. New York gained 36.1%; Milwaukee, 32.6%; Kansas City, 31.5%; New Orleans, 28.6%; Baltimore, 21.1%; Chicago, 20.2%; Pittsburgh 19.5%; Detroit and Philadelphia, 13.6 % each; Boston, 13.4 % and St. Louis and Cincinnati 11.2 % each. Indianapolis decreased 72 %; Los Angeles, 46.1 % and San Francisco 5 %. In our local jobbing trade the movement in dry goods compares well in the amount of business done a year ago, but no rush is looked for before the beginning of March. There is some further cutting of prices, to prevent a diversion of trade to other points. Wholesale grocers notice a good distributive demand, excepting for coffee, which is sluggish. Flour is stiffly held despite a reaction in wheat, which is about 2¢ lower for spot. Reports received from Antwerp stated that the wheat crop in South America is a failure. The movement of corn is free from all the Atlantic ports and the exports of provisions are in excess of the same time last year, comprising 6,534,000 lbs. of lard and 12,500,000 lbs. of bacon. Cotton advanced 1½¢ for spot. As a whole prices have a lower range.

The advance statements of January exports from the United States show the movement under the four principal classes to have aggregated in value \$7,500,000 more than for the corresponding month of 1888, due to the larger movement of corn. For seven months the comparison with the previous year shows that the aggregate value of the four principal classes exported closely corresponds, as follows:

	1889.	1888.
Breadstuffs (7 months).....	\$73,814,700	\$82,501,764
Cotton (5 months).....	149,841,015	148,038,757
Petroleum (7 months).....	29,933,470	27,790,741
Provisions (7 months).....	57,263,581	53,593,081
Total.....	\$316,852,766	\$311,924,343

Exports of specie from this port during the week were \$288,000, and the imports of specie \$379,000. Since January 1 the exports are \$3,885,000, as compared with \$3,465,800 for the same time last year. The imports of merchandise at this port during the week were valued at \$9,691,000, of which \$5,875,000, represents dry goods. Since January 1 the total is \$70,162,000, an excess of \$4,500,000, compared with last year.

The New York Board of Trade desires to co-operate with the movement originating in St. Louis to secure the enactment of a national bankruptcy law. The Direct Tax bill, though passed by both houses, hangs fire. There is little prospect of the passage of any revenue bill at this session of Congress. The Legislature of Delaware has passed an act repealing the law which imposed a tax of \$25 on persons selling goods by sample in that State. A new banking institution, to be known as the Cosmopolitan Bank, has been organized under the State laws, and will soon be located in the vicinity of Madison square.

Coal Market.

The Anthracite Coal trade is suffering from a glutted market and the companies struggle in the effort to uphold prices against the competition of large individual operators like Cox Bros. & Co. and Pardee & Co., who are represented as having decided between the alternatives of selling Coal at a concession or shutting down their collieries. "It is stated that Cox Bros. & Co.'s agent acknowledged having sold Broken and Egg Coal recently at \$3.50 per ton or less f.o.b. in New York harbor, and he also said that \$4 f.o.b. had been accepted by his firm for Stove and Chestnut sizes." According to report, the sales agents of the large companies, at a conference last week, seriously discussed the expediency of freezing out individual concerns by making a general slash in prices, but the final decision was to stand firmly in their present attitude. The Reading Company's accumulation at Port Richmond has increased to 225,000 tons, and yet they are unable to load their steam colliers in the absence of orders for Eastera shipment. A "high official" in Philadelphia is quoted as saying that no more collieries will be shut down at present, whatever individuals will do. Not altogether in harmony with this view, a prominent official of the Coal and Iron Company said: "I do not anticipate any change in prices. We are mining too much Coal; not only the Reading but all the companies. It must stop and stop soon or there will be trouble. It seems to me that all the Anthracite Coal miners ought to shut down for two weeks and tri-weekly next March, if need be. This policy was pursued in former years and there is no reason for departure from it now."

Apparently regardless of "trouble" in prospect, the production of Anthracite for the week ended February 16, was 565,505 tons, an increase of 105,000 tons over the previous week, but a decrease of 93,000 tons compared with the same week last year. Since January 1 the total is 3,788,000 tons, against 3,910,000 for the same time in 1888. Reading Railroad's Coal tonnage last week was 97,202 tons, an increase of 58,041 tons.

Bituminous Coal is unchanged, but a sharp competition is looked for in the effort to secure contracts soon to be offered. The percentages of production for shipment at tidewater are being averaged.

Metal Market.

Copper.—In the London market there has been no change in spot Chili Bars and good Merchantable, both remaining £77.-10/, but futures gave way from £75 to £71 yesterday, the sales summing up 1200 tons. Meanwhile in our own market the syndicate renewed its pool sale to manufacturers for a further period of three months, to date from April 1, for a total amount of between 12,000,000 to 16,000,000 lb at the old price of 16½¢. This is the only actual business that has transpired, nothing having been done on the Metal Exchange, where the nominal quotations for futures ranged from 16.95¢ down to 16.75¢ for February to April delivery, nominally. Casting brands are quoted 15½¢ @ 16¢; rumors have kept afloat with reference to negotiations between the syndicate and the Lake Mining Company for modifications in the subsisting contract on the basis of 15 % curtailed production. Furthermore, it was stated that the syndicate intends reducing prices in London, so as to stimulate thereby more liberal consumption. Details have now been received by mail from Paris relating to the panic there in Copper mining shares and those of the Société des Métaux. The drop was at one

time enormous in both, but it fully explained that the financial strength of the Société is unimpaired, the firm of Rothschild and several other powerful financial concerns lending all the aid to the Société which it stands in need of. Thus in reality it does not look as though anything like a collapse of the Société were at hand. The fact is that the Paris Stock Exchange, as well as that of London and leading Continental countries, is so much mixed up with Copper shares that bear raids are almost of weekly occurrence, drawing their substance from all sorts of mendacious rumors and pure inventions. The actual product of the 11 Lake Superior mines in January was 4557 tons, as compared with 3686 in 1888. The accounts from the Calumet and Hecla about the continuance of the fire seemed to have in reality but little significance. Spot Copper advanced this morning from £77. 10/ to £77. 12/6, and futures from £71. 10/ to £72. 10/. Lake closed firm at 164¢ @ 164¢.

Tin.—There has been a further decline in spot Tin in London from £94. 12/6 to £94 yesterday, and in futures from £97. 7/6 to £94. 15/, sales summing up 650 tons. Here the market followed suit by degrees, 10 tons spot being sold at 21.30¢, 10 tons April at 21.45¢, and subsequently 10 tons February and 10 tons April both at 21¢. As per cable from Gilfillan, Wood & Co. to Mr. Ch. Nordhaus, their agent, 89 Water street. The shipments of Tin from the Straits settlement during the fore-half of the current month to the United States have been 500 tons, as compared with 200 same time last year. Since January 1 they were 1050, against 600, and to England 3700, against 4300. There being no change in London, the closing price of spot Tin is 21¢ here. **Tin Plates.**—In Tin Plates on the spot very little has transpired, and that little at rather weaker prices. In futures some orders for Cokes have been placed, yet a considerable quantity are still held back awaiting lower prices in Wales, and these are gradually coming about. We quote, large lines, per box: Siemens-Martin Steel, Charcoal Finish, \$4.75 @ \$5.50; Ternes \$4.12½ @ \$4.25; Coke Tins, \$4.22½ @ \$4.30, and Wasters \$4.12½ @ \$4.15. The quotation in Liverpool is unchanged at 18/ for Coke Tin.

Lead.—In the absence of an active consumptive demand the market has been ill sustained, and some 200 tons were sold at 3½¢, the tendency still being downward, speculators for a rise seemingly not having courage enough to take hold of the metal, low as it is. Out West the quotation has ranged between 3.40¢ and 3.45¢. In London during the week Soft Spanish declined from £12. 15/ to £12. 10/, and English Pig from £13 to £12. 15/.

Spelter.—The demand being the reverse of active, and Ores obtainable at some reduction in the West, weakening influences have been brought to bear on the market, so that Common Domestic has to be quoted 4.90¢ on the spot. Production in 1888, as per statement of Mr. Ch. Kirchhoff, Jr., agent of the Geological Survey, is shown to have been 55,913 tons of 2000 lb, Illinois having produced 22,445; Kansas, 10,442; Mississippi, 13,465, and Eastern and Southern States 9561. Gradually the United States are thus becoming quite large producers of Spelter. Silesian declined in London from £17. 12/6 to £17. 7/6, the quotation here being 5¼¢ nominally.

Antimony.—Has been moderately dealt in on the spot for actual consumption at 13¼¢ Cookson and 11¼¢ Hallett.

New York Metal Exchange.

The following sales are reported:

MONDAY, February 18.	
10 tons Tin, February.....	21.00¢
TUESDAY, February 19.	
10 tons Tin, April.....	21.00¢

British Iron and Metal Markets.

[Special Cable Dispatch to The Iron Age.]

LONDON, WEDNESDAY, February 20, 1889.

The syndicate agents have continued to purchase Chili Bar prompts at £77. 10/, but consumers, it is said, have been buying at a lower price. The official prices for three months' futures have been reduced to £71 @ £72, in the absence of supporting purchases to offset "outside" transactions, but these prices are still a full £5 above what sales are said to have been made at on the street "ex-syndicate." Transactions in sellers' option all the year are reported at £61 @ £63. The market is in a chaotic state, suggesting almost complete absence of speculative support from the syndicate interest, for the time being.

Stocks in public stores increased 6000 tons the first half of February, and the supply of Anaconda Matte in Europe is now said to be at least 24,000 tons. The Chili charters for last half of February, as per telegraph, amount to 1000 tons.

It is reported from Paris that the organization of a new company, to be known as the Compagnie Auxiliaire des Metaux, has been formed, with a capital of £1,600,000, to assist the Société des Metaux. Negotiations are said to be pending between the two organizations for the transfer of a large amount of present Société des Metaux holdings. The total of the latter is said to represent an actual outlay of £11,000,000.

The report also has circulation that a loan of £1,000,000 has been obtained from London and Continental bankers, against which cash warrants have been pledged to a total, it is stated, of over 20,000 tons.

The syndicate agents have accepted upward of 4,000 tons of good merchant copper, on contracts, purchased at £79 several months ago.

The formation of the projected Copper Bank has not progressed, and it seems to be the opinion in most quarters that it is a failure from the present outlook. The difficulty is not so much a matter of financing under certain conditions, as in respect to inducing the large mining companies to adopt measures that capitalists think most advisable. As matters stand the capitalists require that the producers curtail their output and continue on at the original prices. The mining companies, it is said, are willing to accede to the request so far as restricting the production is concerned, but only on the condition that they are compensated.

Prices for Block Tin have fluctuated widely, touching as low as £93. 10/, under the influence of heavy selling. Sales are said to have been large against extensive supplies expected from the Straits, and now about due. There has also been considerable realizing by holders who have carried stocks for some time past. The report has been made that the Chinese have increased the production of late, but this was subsequently denied flatly. Cash purchases have increased in volume considerably during the latter portion of the week, and the market premium on cash Australian has widened out to 12/6.

The Pig Iron market has continued active and a further advance is asked in nearly all sections. Most Scotch brands have been sold at about 6d advance, as have also Middlesboro makes, but no further rise is noted on Hematite. Additional furnaces are starting up under the stimulus of the enhanced prices and brisk demand, more particularly in Scotland. Freight from Glasgow to New York are 1/ higher.

The Continental and English Steel Rail makers are soon to hold another meeting in London, to complete the formation of the proposed syndicate. No further change has taken place in the prices for Rails or Billets, but makers generally are asking 5/ advance over the prices at which Blooms and Slabs were sold last week.

Business in Tin Plates has been comparatively small again. Prices show slight irregularity, but the bulk of the transactions are still at an average of 13/ for B.N. grade Cokes. The Yuiscedwyn Works have started up.

Scotch Pig.—There continues to be a good trade and prices are strong throughout.

No. 1 Coltness, f.o.b. Glasgow.....	52/6
No. 1 Summerlee, " ".....	51/
No. 1 Gartsherrie, " ".....	49/
No. 1 Langloan, " ".....	51/
No. 1 Carnbroe, " ".....	44/6
No. 1 Shotts, " at Leith.....	50/6
No. 1 Glengarnock, " Ardrossan.....	48/
No. 1 Dalmeilington, " ".....	44/3
No. 1 Eglinton, " ".....	42/9
Steamer freights, Glasgow to New York, 5/; Liverpool to New York, 10/.	

Cleveland Pig.—Trade in this line has continued brisk and prices are 6d higher than a week ago. No. 1 Middlesboro', G.M.B., 38/6; No. 3 ditto, 35/.

Bessemer Pig.—The demand continues lively and the market strong. West Coast brands, mixed numbers, 46/, f.o.b. shipping point.

Spiegeleisen.—A good demand is still reported and prices are very firm. English 20% quoted 80/, f.o.b. N. W. England shipping point.

Steel Rails.—There is still an active demand, and prices are strong. Heavy sections quoted at £4. 10/, and light sections £4. 15/ @ £5, f.o.b. at N. W. England shipping point.

Steel Blooms.—Business moderate, but makers very much firmer. We quote £4. 2/6 for 7 x 7, f.o.b. at N. W. England shipping point.

Steel Billets.—The demand continues fairly active at firm prices. Bessemer, 2½ x 2½ inch, £4. 5/, f.o.b. at N. W. England shipping point.

Steel Slabs.—The market very firm, but demand merely fair. Bessemer, £4. 2/6, f.o.b. at N. W. England shipping point.

Old Rails.—Transactions moderate, but generally at firm prices. Tees quoted at £3. 5/ @ £3. 6/, and Double Heads, £3. 8/ @ £3. 10/, c.i.f., New York.

Scrap Iron.—A moderate demand only and prices unchanged. Heavy Wrought quoted at £2. 2/6 @ £2. 7/6, f.o.b.

Crop Ends.—Demand rather slow, but sellers firm. Bessemer quoted £2. 10/ @ £2. 12/6, f.o.b.

Tin.—The market very irregular and looking weak. Straits quoted at £93. 10/ @ £93. 15/, spot, and £94 @ £94. 10/ for three months' futures.

Tin Plate.—Very little change in business or demand, and prices about the same as last week. We quote, f.o.b. Liverpool:

IC Charcoal, Allaway grade.....	15/3 @ 15/6
IC Bessemer Steel, Coke finish.....	13/6 @
IC Siemens.....	13/9 @
IC Coke, B. V. grade.....	13/ @ 13/3
Charcoal Terne, Dean grade.....	12/ @ 12/6

Manufactured Iron.—Common Bars are a shade lower. Otherwise former prices rule, and the market continues fairly active. We quote, f.o.b. Liverpool:

Staff. Ord. Marked Bars.....	£ s. d. @ 8 2 6	£ s. d. @ 5 12 6
Common.....	£ s. d. @ 5 12 6	£ s. d. @ 5 12 6
Staff. Bl'k Sheet, singles.....	7 12 6 @	7 12 6 @
Welsh Bars (f.o.b. Wales).....	5 2 6 @	5 5 0 @

Copper.—Outside of speculative trading very little doing. Prices are still unsettled and irregular. The nominal prices are: Chili Bars, £77. 10/ for spot, and £65 @ £72 for futures. Best Selected, £78 asked.

Lead.—The demand slow and prices barely steady. Quoted at £12. 10/ @ £12. 12/6 for Soft Spanish.

Spelter.—Trade moderate at slightly lower prices. Quoted at £17. 5/ @ £17. 7/6 for ordinary Silesian.

Detroit.

WILLIAM F. JARVIS & Co., successors to Chas. Himrod & Co., under date of Feb. 18, 1889, report as follows:—**Pig Iron.**—There is scarcely any change in the market since our last report. Lake Superior Charcoal is moving a little more freely, but the majority of buyers still cling to the idea that this grade must come down, in sympathy with the constantly lowering quotations on Coke Irons. Thus far, makers stubbornly refuse to accept orders, unless full prices are obtained; consequently buyers are ordering only for immediate wants. As consumption and production are so nearly equal on this grade, it looks reasonable that, unless some furnace gets hard up, and in order to force buying offers at a sacrifice, buyers, when they can no longer put off placing their orders, will have to pay prices asked; but, if a few furnaces accept less, the majority are likely to follow suit, and ruinous prices will result, and no more Iron be sold than would have been at the higher prices. For the present we quote as follows:

Lake Superior Charcoal, all numbers.....	\$19.50 @ \$20.50
Lake Superior Coke, all ore.....	18.75 @ 19.25
Lake Superior Coke, cinder mixed.....	17.75 @ 18.25
Standard Ohio Black Band.....	18.75 @ 19.25
Southern No. 1.....	17.00 @ 17.50
Southern Gray Forge.....	15.00 @ 15.50
Southern Silvery.....	16.50 @ 17.00
Jackson County (Ohio) Silvery.....	18.25 @ 18.75
Old Wheels.....	18.50 @ 19.00

Foreign Markets.

EQUIVALENTS.

	Cents.
Franc, Peseta or Lira.....	19.3
Florin (Netherlands).....	40.2
Florin (Austria).....	35.9
Milreis (Portugal).....	\$1.08
Milreis (Brazil).....	\$4.6
Mark (Germany).....	23.8
	Pounds.
Allogram.....	2.205
Picul.....	134.

CHILI.

VALPARAISO, December 21, 1888.—**Copper** was at first well sustained, but toward the close buyers withdrew in consequence of unfavorable cablegrams. Sales for the fortnight reached 12,138 quintals, at from \$27.60 @ \$27, the latter equaling £75. 14/ with 30/ freight to England. **Coal.**—A cargo of Newcastle West Hartley fetched 36/ on the spot, while later shipments have been paid 46/6, and are at present held at 45/. **Exchange.**—Drafts on London, 90 days' sight, are bringing 28% d.—Weber & Co.

WEST INDIES.

PORT OF SPAIN, TRINIDAD, January 18, 1889.—**Asphaltum.**—Our market has been moderately active and well sustained at \$14.04 3/4

ton for Boiled, and \$6.84 for Crude, free on board, including export duty. Since beginning of the month there were shipped 1508 tons, as compared with 278 tons same time last year, and 975 tons in 1887. **Exchange** on London, 90 days' sight, \$4.77 @ \$4.83.—E. P. Masson.

EAST INDIES.

MANILA, February 11, 1889.—**Hemp.**—There have been buyers at \$15.15-16 3/4 picul, against \$9.5-16 same date last year, equaling 3/4 ton, cost and freight, £54, against £33. Clearances for the United States since last cable amounted to 8000 tons as compared with 2000 tons in 1888; since January 1, 44,000, against 19,000; loading for the United States, 38,000, against 18,000; cleared for England since January 1, 28,000, against 21,000; loading for do., 8000, against 11,000; cleared for all other ports, 4000, against 4000; receipts at all ports since last cable, 18,000, against 9000; and since January 1, 78,000 bales, against 58,000 in 1888 and 52,000 in 1887. **Freight.**—\$7.50, against \$5.50. **Exchange.**—6 months' sight 3/8, against 3/8.—Kerr & Co., through their agent, Mr. Charles Nordhaus, New York.

PENANG, January 9, 1889.—**Tin.**—Receipts during the fortnight reached 13,000 piculs, of which Europeans took 80,000 and Chinese 5000. The market opened on the 22d ult. at \$36.70 3/4 picul, closing at \$37.80, at which both Europeans and Chinese have continued buying.—Schmidt, Kusterman.

SPAIN.

BILBOA, January 26, 1889.—**Iron Ore.**—Very little transpired during the week, sales being limited to a few cargoes of Rubio, which may be quoted 7/ @ 7/3; for Campanil the quotation is 8/ @ 8/3, although it is stated that five companies have clubbed together and refused 8/6, in view of the scarcity of that kind of Ore. There is no impediment to a rapid dispatch of steamers, so that the export is so far ahead of last year, having been since January 1 286,115 tons, against 276,019 same time last year. **Pig Iron.**—There were shipped during the week 2249 tons coastwise and 2525 abroad, the latter by the Vizcaya Company. February 2, 1889.—The market has continued with a good inquiry without leading to much doing, prices remaining unaltered. There are steamers enough waiting to take their turn in loading, with a joint capacity of 125,000 tons. Total shipments to-day 345,212 tons, against same time last year 359,747. **Pig Iron** has been dull with only 815 tons shipped coastwise.—Bilboa Marítimo y Comercial.

BELGIUM.

BRUSSELS, February 9, 1889.—**Iron.**—The Belgian Iron market has continued firm without changing quotations. Consumers gradually subscribe to the higher prices fixed, business thereby continuing its normal course. A good deal of Forge Pig has been selling to arrive at 4.60 @ 4.70 francs 3/4 100 kg., all the way to July 1, a circumstance lending the general market a certain degree of stability, with a likelihood of Finished Iron soon being further advanced in price. The January production of Pig Iron has been 75,640 tons, 32 blast furnaces remaining blown in and 18 blown out. Steel Beams go on gradually superseding Iron Beams, M. Boel, of La Louvière being so far the chief producer. **Steel** is in good request. The Puggie Works made a contract for 1500 tons for Switzerland, and 3000 tons for Mexico. All bolt and Steel works have booked orders enough to last them for several months. Negotiations for the renewal of the International Electrical Syndicate have been resumed, but so far led to nothing, the pretensions of one of the Belgian mills being the obstacle. As for the Belgian share in the cupolas for the Meusefort, it may be stated that it amounts to 3,000,000 francs.—Moniteur des Intérêts Matériels.

GERMANY.

HAMBURG, February 9, 1889.—**Iron.**—The improvement in the Rhenish-Westphalian Iron market has continued during the week, there being quite a revival in the Pig Iron demand for a couple of weeks past. The activity in Spiegel (10 to 12 % Manganese), has been such, both for home use and export, that the price has been pushed to 61 marks 3/4 ton. The rolling mill's are quite inclined now to buy Forge Pig to arrive all the way to July 1, stocks having been completely absorbed in the hands of various producers. Siegen is now getting 53 marks, and the syndicate fixed the range at 52.50 @ 54. Foundry Pig is just as lively, White bringing 52.50 @ 53; Bessemer, 57; Luxembourg White, 34 @ 35 and over, and Gray, 40 @ 43; English Bessemer, 45/. Finished Iron is doing well for home consumption, with orders all the way to July 1. Hoop Iron is remarkably active, the general impression being that the tendency in all rolling mill products is bound to remain upward for months to come, hence the general rush to secure at current prices whatever hands can be

laid on. The Wire branch is also stiffening at an advance of 10 marks 3/4 ton, both Rhenish-Westphalia and Upper Silesia. Tolerably satisfactory reports are made by foundries and machine shops; they find it difficult to keep pace with the advancing raw material. Car works are loaded down with orders, those for the week summing up 7000 freight cars and 5000 passenger and luggage cars. Dortmund quotes Wire Rods, 116 @ 118; Steel Rails, 190 @ 130; do Sleepers, 120 @ 125, and Steel Rails for mines, 110 @ 115. **Metals.**—Firmness is noticeable in Lead and Spelter, and weakness in Copper.—Borsenhalle.

HOLLAND.

ROTTERDAM, February 5, 1889.—**Tin.**—Since the beginning of the month the Tin trade in Holland has been the reverse of brisk, although a good undercurrent of inquiry exists since the last auction of the 31st ult., which established a rise of 1/4 guilder. Holders are not anxious to go on selling at 59.25 for spot Banca and Billiton, and 59.50 futures.

The following statement shows the position of Banca Tin in Holland on the 31st January from the official returns published by the Dutch Trading Company:

	1889.	1888.	1887.
Import in January, Slabs.....	15,000	23,399	12,499
Deliveries in January, Slabs.....	7,950	5,200	14,805
Stock, second hand, Slabs.....	42,940*	36,309	30,786
Unsold Stock, Slabs..	129,371	73,745	43,424
Total Stock, Slabs	172,311	110,054	74,210
Afloat, piculs.....	5,000	3,000	4,600

* Including to-day's sale.

Statement of Billiton:

	1889.	1888.	1887.
Import in January, Slabs.....	3,298	5,500	11,337
Deliveries in January, Slabs.....	4,535	7,033	8,070
Stock, Slabs.....	19,561	14,595	25,888
Afloat, piculs.....	17,000	18,000	12,500
Quotation 31st January:			
Banca, florins.....	58 1/2	98	61 1/2
Billiton, florins...	58 1/2	98	61 1/2

The preceding combined returns of Banca and Billiton for 1889, compared with those for 1888, exhibit:

	Slabs.	Equal to Tons.
A decrease of the import for January of.....	10,601	331
An increase in the deliveries for January of.....	252	8
An increase of the stock second hand of.....	11,597	362
An increase of the unsold stock of.....	55,626	1,738
An increase of the total stock of.....	67,223	2,101
A decline of the quotation of Banca of florins 39 1/2 equal to £65. 5/ 3/4 ton.		

—De Monchy & Havelaar

Long Wire Rope Cables.—The St. Louis *Globe Democrat*, of recent date, prints an interview with Joseph D. Bascom, of the Broderick & Bascom Rope Company, St. Louis, in the course of which he gave the following statement of long cables, all of them being 1 1/4-inch in diameter:

For	Length, feet.	Weight, pounds.
St. Louis, Mo.....	35,400	98,100
St. Louis, Mo.....	30,950	78,762
Omaha, Neb.....	28,900	75,218
Cincinnati, Ohio.....	27,241	70,071
St. Louis, Mo.....	24,250	62,561
Kansas City, Mo.....	23,500	64,235
St. Louis, Mo.....	22,300	57,025

The first rope in the above list is the longest and heaviest rope ever made—35,400 feet. The weight of this cable, with the reel, was 110,000 pounds. Each rope is made in one continuous piece, without splice. The cables are shipped on cars built especially of 140,000 pounds capacity. The company has recently erected a new and commodious factory, which they have equipped with the latest and most improved machinery, principally of their own designing. They are now enabled to manufacture wire ropes of any size and length up to 100 tons weight in one continuous piece, with absolute uniformity of lay under equal strain on each wire, and without twisting the individual wires.

change now that he has been called to the reward that awaits those who, like him, strive conscientiously to follow the path of duty.

With scarcely any advantages of education in his youth, Mr. Born gradually, step by step, worked his way up in the world, educating himself as he progressed, until he became regarded as one of the leading business men of this city, whose counsel was sought and opinion respected by all classes.

His life offers a conspicuous instance of what can be accomplished by application to business, perseverance, observation and strict integrity, when combined with ordinary economy.

In the hope that his example may be followed by many, we who have shared his counsels, and most keenly feel his loss, join in this tribute of respect to his memory.

Items.

Reading Hardware Company, Reading, Pa., announce that after a period of several months their new buildings are completed. Their new warehouse has been occupied since February 1, and the large iron foundry will be put in operation on or before March 1. They are now placing machinery in their new factory building, so that by March 20 they will be manufacturing goods therein, and state that by April 1 they will be in full operation and in better position to meet the wants of the trade than they were previous to the fire.

Joseph W. Wayne, 124 Main street, Cincinnati, Ohio, issues circulars relating to his varied line of Refrigerators, in which the different patterns are exhibited and the special features of their construction explained. In addition to the assortment of patterns for household use larger ones for the use of brewers, butchers, grocers, &c., as well as beer and wine coolers, are illustrated. He calls attention to the numerous improvements in the finish that have been made in the past few years, new patterns put on the market, &c.

It will be observed that among our special notices is one headed "An Unusual Opportunity," in which a well-established Hardware business is offered for sale. Particulars in regard to the location and the advantages of the opportunity, extent of stock, &c., are given as above.

Huber Mfg. Company, Philadelphia, Pa., issue a price list of the Arrow Brand Augers, Auger Bits, &c., manufactured by Dewitt, Morrison & Kelly. The special features of these goods are fully described, and emphasis is laid upon their quality. The different patterns are also illustrated, with the list prices. Circulars also in regard to the Hardware specialties of the company are inclosed.

Seavey Mfg. Company, 93, 95 and 97 North street, Boston, Mass., issue a convenient pamphlet showing a varied line of Deep Stamped, Retinned and Common Stamped Ware, Japanned, Planished, Coppered and Pieced Tin and Sheet Iron Ware, Registers, and Tinmen's and Kitchen Furnishing Goods. It is fully illustrated with small cuts, which, however, represent the goods satisfactorily, and the pamphlet (100 pages) is indexed throughout, facilitating reference to any desired line.

Chicago Stamping Company, Chicago, Ill., issue a 40-page illustrated circular of seasonable goods, including Freezers, Oil Stones, Challenge Refrigerators, Bird Cages, Water Coolers, &c., with a number of specialties. They issue another pamphlet which is devoted to Milk Cans and Dairy Supplies.

Fred. W. Shear has severed his connection with Bench & Shear, Skaneateles, N. Y., and purchased Mr. Nichol's interest in the firm of Nichols & Foote, Scranton, Pa., the name of the firm becoming Foote & Shear.

Hibbard, Spencer, Bartlett & Co., Chicago, Ill., are sending out two seasonable prices current which have evidently been prepared with especial care and relate

to a varied and interesting line of goods. One is their Fishing Tackle catalogue, January 29, No. 101, in which is exhibited an assortment of Fishing Rods, Reels, Fish Hooks, Trolling Baits, Bass and Trout Flies, and a variety of Fish Lines, including Lines in hanks, Block Lines, Coil Lines, &c. Casting Lines and Leaders, Sinkers, Landing Nets, Fly Books, Rowlocks, Rod Attachments, Mountings and other specialties are also illustrated. Incidental reference is made to Bicycles and Base-Ball Goods. The other price current is devoted to the Ashtabula Steel Goods, Hoes, Scythes, Curry Combs, Sheep Shears, Pruning Tools, Wheelbarrows, Lawn Mowers, Wire Netting, Barbed Wire and a variety of other goods, some of which are novelties adapted to the wants of the spring trade. In connection with these they also send out a price list of Victor Safes, with testimonials as to their fire-proof qualities.

J. B. Field & Co., Detroit, Mich., issue a circular describing the McMurphy Cleaner, which is a cleaner and lead remover combined. It is constructed so that it is self-adjusting to the surface of the inside of barrels from breech to muzzle, and the efficiency of its operation is alluded to.

E. I. Horsman, 80 and 82 William street, New York, issues a price list devoted to Tennis, Croquet, Base-Ball Supplies, Games, Home Amusements, Photographic Outfits, &c., in which are represented a number of novelties, together with well-known goods.

A circular is issued by Cordley & Hayes, 37 Barclay street, New York, general agents for Monroe Bros.' Patent Refrigerators, in which a detailed description is given of their No. 75 Fiber-Lined Refrigerator, with a cut showing its construction and a statement of the advantages possessed by it.

A new issue of the official classification applying to freights between the seaboard and Chicago or St. Louis went into effect 18th inst., and Hardware, which before was second class under all circumstances, is now made second class as before when shipped under owner's valuation; but when "value 5 cents per pound" is written on receipt it now takes third class. This arrangement will be to the advantage of the trade on the shipment of many heavy goods.

M. Mahony, Troy, N. Y., in connection with the Mahony Boilers, Heaters, Furnaces, &c., issues a pamphlet describing his line of Gas Sad Iron Heaters and Sad and Polishing Irons, &c. A variety of Heaters, Sad and Polishing Irons are thus exhibited.

Cordley & Hayes, 37 Barclay street, New York, announce that they have accepted the agency for the sale of the goods manufactured by the Amoskeag Indurated Fibre Company, Peterboro, N. H.

Julius Berbecker & Co., 65 Duane street, New York, in connection with their large line of Brass Goods, Upholsterers' and Cabinet Hardware, Scissors, Shears, &c., are putting on the market a large assortment of Upholsterers' Nails, the manufacture of which they control. This is a comparatively new branch of manufacture in this country, and the Nails thus offered to the trade are made by a new method, which is referred to as securing an excellent result in the quality of the goods at a moderate cost. The establishment on a successful basis of this line of manufacture as a new American industry is a matter for congratulation, and we understand that the manufacturers are in a position without difficulty to meet the prices of their foreign competitors, who have heretofore had the bulk

of the trade, and are, in fact, able also to export the goods to other countries. The catalogue, in which these Nails and a large variety of Upholstery Goods are illustrated, with list prices, is one of interest to the trade.

The Missouri Refrigerator Mfg. Company, St. Louis, Mo., have issued their catalogue for the present year, showing their line of Jewell Refrigerators. Besides the variety of family Refrigerators offered, it represents an assortment of Grocer, Upright, Butchers', Restaurant and Hotel Refrigerators, with which it is announced that they are prepared to furnish at short notice a line of Bar Fixtures, Beer Coolers, Counters, &c. It is stated that, in order to meet the demand for these goods, it has been necessary to more than double their manufacturing capacity and to add a large warehouse.

THE ANNUAL MEETING OF THE AMERICAN SCREW COMPANY

was held February 12, at the office of the company, Providence, R. I. From the report of William H. Henderson, the treasurer, who has occupied this position for 25 years, his connection with the company covering 30 years, it appears that the business of the corporation during that time has more than quadrupled. The number of personal accounts on its books has increased from about 850 in 1860 to 2700, the customers being now in every one of the United States. The total sales from the commencement of the business to December 31, 1888, amount to nearly \$53,000,000, and the total ascertained losses were only \$79,030, less than one-seventh of 1 per cent. of the sales. After a resolution in recognition of the long, faithful and able service rendered by Mr. Henderson as treasurer, it was moved that a testimonial of the company's appreciation be obtained and presented to him by the board of directors. From a synopsis of the report of the president, Edwin G. Angell, we make the following extract:

The report states that the Screws carried over are selling at a large advance over the prices of 1885. The sale of Wood Screws in 1888 was disappointing, partly because of the existence of stocks in jobbers' hands, purchased at extremely low prices. Consumption fell off somewhat, as usual in Presidential years, but stocks, old stocks, are reduced, and consumption has for some time been beyond production. In 1887, under the Screw Association, our sales were made beyond allotment, and we had to pay over to associates a very large sum in cash. In consequence our allotment was increased and we still have to pay, but not so much as formerly. It is doubtful whether such associations are beneficial in the long run. If the statistics made available by the association had been so before the extensive building of machinery brought about by the high prices of 1881 to 1883 inclusive, it is doubtful if we should have had to record the unremunerative business of 1885 to 1887. The demand for Wood Screws is limited, and cannot be enlarged at the will of inventors and capitalists. We have continued experiments in Swaging Screws, and feel warranted in building machinery which will, with what we now have, produce daily half as many Wood Screws as we produced daily last year. Rogers has improved on Harvey's discovery, securing an enlargement of four numbers of the Screw gauge with cheap material, where Harvey enlarged only two numbers, with costly Swedes iron. We have devised machinery also to produce a large head, which Harvey failed to do, which has proved very satisfactory, though at the outset it appeared impossible.

While we hope from the success thus far attained to employ the new processes to advantage in the future, you will understand that up to this time they have been a matter of expense rather than of profit, and therefore have not contributed to the profits of the past year. Those were the result of the business conducted without their aid. The general outlook for the present year is not for the moment favorable. Continued tariff discussion, overproduction of pig iron, growing accumulation of the stock of copper in the hands of the French syndicate, decline of railroad building, appear to affect unfavorably the minds of buyers, and thus far sales in 1889 have been light. The foreign Screw makers recently formed a Union and advanced prices greatly, and our chief competitor

abroad is reported to be making four or five times as many goods as we are. The establishment of a branch factory in Canada to supply this market if Congress reduced the duty upon screws without reference to raw material has proved to have been a blessing in disguise for us.

How to Sell Goods.

Prominent among the features of the Territorial Fair, lately held at Salt Lake City, Utah, were a number of special prizes offered for essays upon different subjects, the evident object being to bring out suggestions looking to the best means of attaining success in various lines of business. Mr. Spencer Clawson, a wholesale merchant, offered a prize of \$25 for the best essay on "How to Sell Goods," which prize was secured by Mr. B. F. Cummings, Jr. The subject treated is of such great interest to a large class among our readers that we give the essay in full herewith.

A moment's reflection will serve to show the infinite importance of this subject. It not only concerns the salesman and merchant, but every member of civilized society; for, as all members of civilized communities are compelled to purchase and consume merchandise, it follows that all are interested in the manner in which the merchandise they buy is sold.

Methods of selling goods may be pursued which are hurtful to the interests of merchant and customer alike, and which result in disappointment and injury to the latter, and a loss of custom and final failure to the former. Or the merchant may pursue a system which, while yielding an excellent profit to himself, will please, gratify and benefit his customers, make them feel that they can do better with him than elsewhere, and so secure their permanent patronage. How to avoid the results of one method and secure those of the other is comprised in the art of selling goods.

The process of selling the goods is intimately connected, indeed begins with, that of buying them; for, as the proverb has it, "Goods well bought are half sold." He, then, who would become a successful seller of goods must first learn how to buy them; and it is an open question among merchants which branch of their calling, buying or selling, requires the longer experience, the shrewder judgement, and the higher order of business ability. As the present purpose, however, is to treat of the methods to be pursued in selling goods, it will be assumed that the stock to be disposed of has been well bought, is suited to the wants of the community, and only awaits skillful and judicious handling by the salesman to yield satisfactory returns to the merchant.

MARKING THE GOODS.

One of the most important matters connected with the mercantile business is the marking of goods. In doing this, three objects should be kept in view: Profit to the merchant, ready sale, and satisfaction to the customer. This last object is often lost sight of, but we insist that a policy on the part of the salesman who does not aim at securing satisfaction to the customer is a short-sighted one, and will ultimately prove disastrous to the dealer. A customer will pay for a suit of clothes a price which will yield to the merchant a fair profit, and yet be content with his bargain; but were a sack of sugar marked to yield half as large a profit, a customer would feel that an attempt had been made to impose upon him. On some kinds of goods, then, customers will willingly allow the merchants a good profit, but others they will purchase only at a very small margin above cost.

It is the duty of the salesman to consider all the circumstances attendant upon this feature of his business, as the amount the capital invested ought to earn, the probable amount of the year's sales, the running expenses of the establishment, the kinds of goods handled, the competition to be met, the class of trade to be catered to, what will and will not satisfy his customers, &c. A volume could be written upon this one feature of mercantile business, but practical experience and native good judgment are the only means by which a salesman can become proficient in it.

Having considered every circumstance which ought to influence him in marking the goods, the salesman should make his prices and then adhere to them. A rumor that a house has two or more prices, according to the customer who is buying, will spread rapidly and soon create a distrust very hurtful to its business. It is unfair, undignified and downright dishonest to make different prices to different customers, other things being equal, such as quantity, time, &c. Uniform dealing one-price houses command a respect and confidence among customers which sliding scale dealers never enjoy.

Careful investigation has shown that in nearly all cases of bankrupt retail dealers a large proportion of the goods on their shelves were unmarked, and hence in a condition of confusion which could not but result in loss and disaster. The retail dealer who puts his goods on the shelves without marking them is tolerably certain to learn by bitter experience sooner or later the folly of his course; and the wholesale dealer who fails to keep a suitable record of prices as the market fluctuates is omitting a vital feature of success.

THE WHOLESALE SALESMAN.

Whether employed in the establishment at home or sent "out on the road" in the capacity of what is called a drummer, the first duty of the wholesale salesman is to make himself thoroughly and perfectly familiar with the entire stock of goods in the department or house in which he is employed. If an article is mentioned he should be able to state instantly whether or not it is in stock. It is of the utmost importance that he should be thoroughly posted on prices, and able to give from memory or his pocket price-book the price of any article the instant it is asked. He should be able to discriminate accurately between brands, grades, qualities, &c., and to explain differences between them to a customer.

Next to having a thorough knowledge of his own stock and business, it is important that the wholesale salesman should be familiar with those of his customer. He should know what kind of a business his customer is doing, what class of people patronize him, and what goods will be most popular among and best suited to the needs of that class. A wholesale salesman should not try to load up a retail dealer with goods not suited to the latter's trade. If this is done the retailer will meet with disappointment and loss, and in consequence of dead stock will be unable to meet his payments. Disgust at his own bad judgment will be mingled with distrust of the salesman who induced him to take the unsaleable goods, and he will thereafter buy elsewhere. Thus the retailer is injured and the wholesaler loses a good customer. All this may happen when the goods causing the trouble are really first-class and sold at a reasonable price; the difficulty lying in the fact that the wholesale salesman either did not know or did not regard what the real interests of his customer required.

All wholesale salesmen of experience understand perfectly well that, having once won the confidence and patronage of a retail dealer, he is influenced to a great extent by their advice and recommendations. It follows, then, that these should be offered intelligently and in the strictest good faith, with an earnest purpose on the part of the salesman to subserve the best interests of his customer. Their interests are identical. The more goods the retailer sells the more he will purchase from the wholesale house which has won his confidence. A bill of goods which is unprofitable for him to buy is unprofitable for the wholesale house to sell to him, and vice versa. In fact, a trunk and branch relationship exists between a wholesale house and the retailers whom it supplies, and the policy of the wholesale salesman should be to cement more and more closely that relationship, and strengthen the ties of confidence and friendship between the two, always having in view the interests of the buyer as well as those of his own house.

It is essential that the wholesale salesman should be thoroughly posted respecting the financial standing of his customer. Upon this point depends to a great extent his success in the art of selling goods. It requires little tact or ability to sell goods to a customer who is bent only on getting all he can on credit, without due consideration of the matter of making payment when due. It may, however, require considerable tact to properly treat a customer whose intentions are honorable, but whose resources, ability or experience are limited. If a buyer is known or suspected to be dishonest, sell to him for cash only. If necessary, tell him frankly that you do not know him to be a man whom you can afford to carry, and that your rule is to extend credit to those only whom you know you can depend upon. If your customer is worthy of credit up to a limit which, however, you do not wish to pass, avoid what, to a good salesman, is second nature, pushing goods upon him. Endeavor to furnish him with what he really needs, and to satisfy him, without going beyond the limit fixed for his credit. But should it be necessary, tell him plainly, but in a frank and friendly way, that at present you do not wish to carry him for more than a given amount. If he is a sensible man, he will take no offense, and if he is not a sensible man, it is unsafe for you to carry him on your books.

Selling goods by traveling salesmen with samples is expensive, but long experience has shown it to be the best method for wholesale dealers in many lines. The sample trunk, if properly prepared and packed, is the wholesale establishment in miniature. By its aid the country dealer is conducted through the big

store in the city, from the basement to the highest story, and is able to make selections as intelligently as if he had paid his fare to the city and was personally present in the establishment he is dealing with. The salesman should see that his sample trunk is complete, neatly and systematically arranged and that the samples correctly represent the stock. He should acquire facility in displaying them, in describing grades, qualities, &c., and in giving prices. The stationary or traveling wholesale salesman should keep complete price books, and post them as often as the prices vary. The memory should not be depended upon without their aid.

THE RETAIL SALESMAN.

Much of the foregoing applies to the retail salesman, especially in regard to familiarity with stock and prices and the giving of credit. He should be perfectly familiar with the goods he handles and with the prices at which they should be sold. If his employer deems it best to give him the "cost mark," as will generally be the case if he proves a good hand, so much the better. He should know exactly where to find any article called for. Time is money to buyer and seller alike, and the time lost by both while a clerk is hunting for some article for which a customer is waiting often amounts to a heavy percentage of its value. It is thus necessary for a retail clerk to be orderly and methodical to a strict degree in handling his stock. He must at once return to their places on shelves or in drawers, &c., the goods he has been showing a customer, and he must do this in such a manner as to preserve the stock in perfect order. A failure to keep the stock in order and the goods in their places and neatly arranged is probably the most common fault of the retail salesman. To avoid it he must put in the spare moments between customers in arranging shelves, drawers, showcases, &c., and in so displaying the goods as to cause them to appear new, fresh, varied and attractive. A retail salesman who can and will keep the goods arranged and displayed to the best advantage will command a high salary and will be a favorite with customers.

A very important auxiliary to the success of the retail salesman is the keeping up of his stock so as to avoid being out of any article. Vigilance and good judgment are required in ordering various lines as fast as they will be needed, but not fast enough to overstock.

The retail salesman, to be successful, must learn to read human nature. He must be able to perceive quickly the sort of person he is dealing with, and to form an accurate judgment as to what sort of an article, and about what price will be likely to suit the customer. Scarcely one customer in ten who enters a store to purchase an article knows in advance exactly what he wants; and it is the province of the clerk to aid him in coming to a conclusion. The art of doing this may be acquired to a great degree of perfection, though not without long practice and experience; and, when acquired, it adds immensely to the value of the services of the salesman possessing it.

QUALITIES NECESSARY IN ALL SALESMEN.

Be industrious; exert yourself actively to show goods to customers and to find what will suit them.

Be patient; preserve perfect equanimity, even though your customer appears trifling, fastidious, or exacting. Sincere efforts on your part to please him will win in the long run.

Be polite; under no circumstances speak to or treat a customer with impoliteness. To do so is to make a mistake inexcusable in a salesman. Your politeness to customers is money to your employer, and is one of the considerations for which you are paid a salary.

Be considerate of poverty; do not try to sell a poor person a more expensive article than he can afford to buy. By so doing you may wound his feelings, and cause him to avoid you in future. Rather try to suit him with an article within his means. If you succeed he will try you again.

Be attentive to small purchasers; if a lady wishes only a spool of silk, and you politely furnish her with the shade desired, she will come to you when she has a larger purchase to make.

Be truthful; never resort to deception in representing the quality of the goods you sell. Truthfulness is in a salesman a virtue which will soon begin to tell in a pecuniary as well as a moral way, for people will flock to the clerk whose word they know they can depend upon respecting the value they are getting for their money.

Be honest; not merely because honesty is the best policy, but because without it life is a failure, though wealth flow in to the amount of millions, and the world lavish its honors and applause. The most hopeless and contemptible of bankrupts is the man who has lost his honesty; and the most useless of all employees—the one who is most expensive while least worthy of a salary, who is most to be avoided by customers and abhorred by merchants—is the dishonest salesman.

Arrangement of Stores.

The Gunn Hardware Company is a flourishing institution of Grand Rapids, Mich. It was founded by W. S. Gunn, who for many years conducted a retail Hardware store in that city, and about three years ago concluded that he would go into the jobbing business. The connection with the retail trade was continued, and a separate building was erected for the wholesale department

with a large, dry and light basement. It was built with the most careful consideration as to the use to which every part of it was to be applied. The basement floor was made thoroughly waterproof by being covered with a layer of cement and crushed stone a foot deep, into which the joists for the floor were laid before it hardened, thus forming a solid support for the heavy goods intended to be stored there. Two rows of inside posts, of iron, were erected the whole length of the building, arranged

a portable shute which enters the basement window. A large elevator runs from the basement to the top floor. The offices, which are handsomely fitted up, are on the second floor, in the front of the building. The remainder of this floor is used for a sample-room. Racks and cases are used according to the character of the goods. Samples of small wares are fastened on long racks extending almost the whole length of the room, the frames of which are A-shaped. Green billiard cloth is

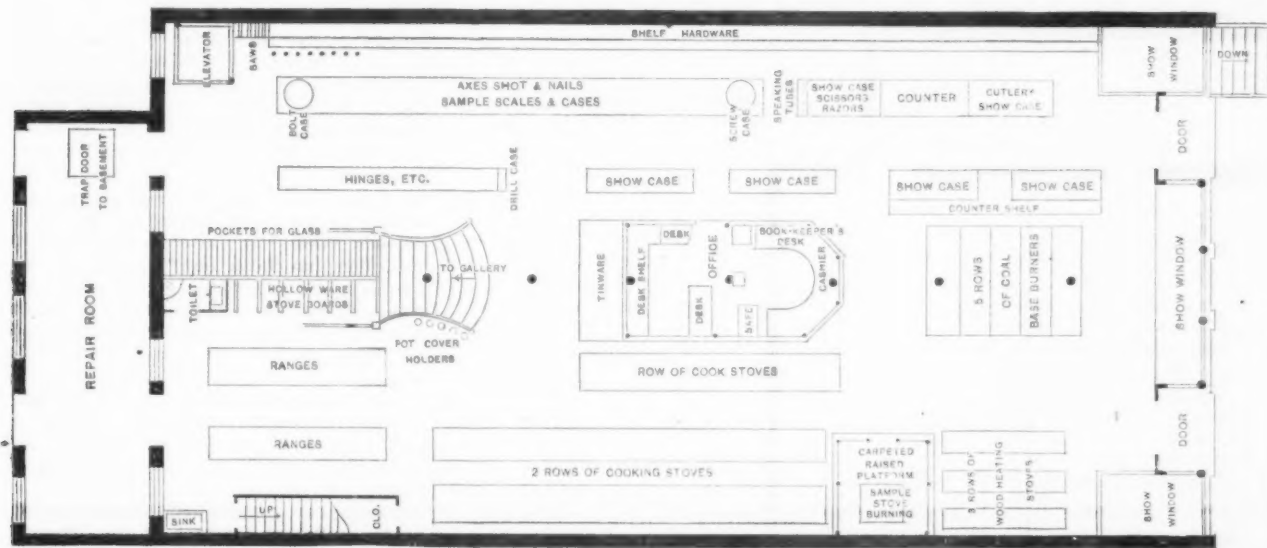


Fig. 308.—Gunn Hardware Company.—Arrangement of Store.

about five blocks distant. The retail store is located at 47 and 49 Monroe street and the wholesale store at 5 and 7 South Ionia street. Shortly after opening the wholesale department Mr. Gunn decided that it would be best for the perpetuity of the business to organize a stock company to conduct it, and the Gunn Hardware Company is the result, of which

14 feet from the sides of the building. The joists were thus of short length, so that they would not sag under the heavy load which they were intended to carry. The windows were also set in front and rear so as to line with the shelving and thus give sufficient light to the center of the stock rooms. The first floor, which is 18 feet high, is used for an iron and steel store,

fastened on the sides of the racks as a background for the goods. This cloth is used, notwithstanding its cost, because it not only makes the display more attractive, but also because goods tacked on it do not rust easily, the cloth background absorbing all dampness. The upper floors are used for stock rooms and packing. Shelving in the stock rooms extends to the ceiling,

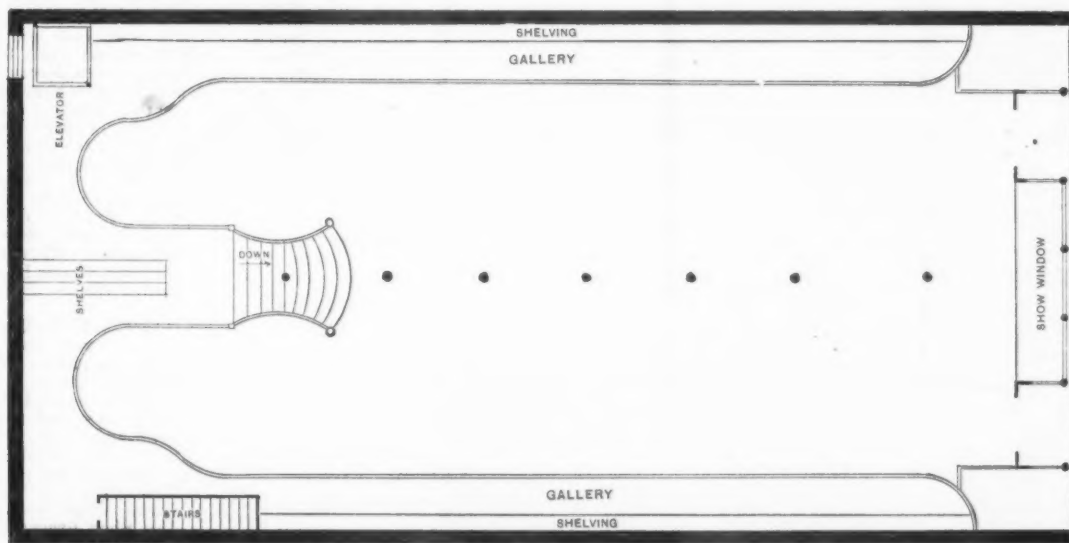


Fig. 309.—Arrangement of Gallery.

Edwin F. Uhl, a prominent capitalist, is president, W. S. Gunn is vice-president and manager, Wm. A. Gunn is treasurer, F. W. Berles is a director and A. S. Goodman is secretary. The enlarged operations of the concern have been attended with remarkable success, which is due very largely to the business sagacity and enterprise of W. S. Gunn, who continues to give the business his earnest personal attention. The arrangement of the company's two stores is worthy of detailed description.

The wholesale house occupies a lot 50 feet by 100 feet and is five stories high,

the stock standing on end in racks extending lengthwise through the building, to bring the weight on the posts and heavy girders. This floor is on an exact level with the floor of a car on a siding of the Grand Rapids and Indiana Railroad, which extends along the rear. Space sufficient for a wagon to pass is left between the railroad track and the building. This space is roofed over to protect teams, workmen and goods from rain. Goods are transferred between the store and the cars over heavy planks, but anything intended for the basement is delivered into

but as the ceilings of these rooms are comparatively low little use is made of step-ladders. Rows of shelving extend down the centers of the stock rooms over the heavy girders running between the posts. The neatness with which these rooms are kept is very striking. Every room is connected with the office by a speaking tube, while the telephone is brought into requisition in communicating with the retail house. Surplus stock is stored in three other warehouses, one of which is 50 feet by 200 feet, one story high, with galleries round it, located on the Michigan Central

Railroad, and the others, which are smaller, are along the Grand Rapids and Indiana. In them are stored Nails, Galvanized Iron, Barb Wire and other bulky articles. The lines carried by this house embrace Heavy Hardware, Nails, Stoves, Chains, all kinds of Shelf Hardware, Revolvers and Ammunition, and a large number of Hardware specialties, such as Scales, Churns, &c. They import their Tin Plate direct from Wales.

The retail store, which in all respects but ownership is entirely distinct from the

space 5 x 19 feet, and the corner windows with a front of 6½ feet and a depth of 12½ feet. The goods displayed in these windows are frequently changed, so as to secure variety, and among the displays a line of Heating Stoves may be mentioned, the most showy one having a gas-pipe conducted into it for the purpose of burning gas at night to attract attention. The large, deep windows on either side are inclosed in plate glass on three sides, the fourth side being the wall, which is covered with green billiard cloth. These side

attention is given to the arrangement of these windows to secure efficiency and attractiveness of the display, and they constitute an interesting and important feature in the arrangement of the store.

It will be observed that the cashier's desk and offices are in the center of the store, so as to be within easy reach of the salesmen. They are lighted by a skylight overhead. As indicated in Fig. 308, one side of the store is devoted to Stoves and House-Furnishing Goods and the other side to Hardware, the space being thus about equally divided. The ceiling is 14 feet high, permitting the erection of a gallery around three sides of the store, so as to add materially to the capacity of the salesroom. This gallery, which is shown in Fig. 309, is reached by a broad flight of stairs in the rear of the store. It is 4½ feet wide, and is placed just midway between the floor and ceiling. Shelves extend along the walls, while an ornamental railing is used for displaying goods of various kinds. A one-story addition, 40 x 13 feet, has been built in the rear for use as a porter's room. In it goods are received, Stoves are polished and all kinds of rough work done which would litter up the store. A shop not shown in the illustration is connected with the store, in which tinning, plumbing, gas-fitting and cornice-making are carried on. The floors and stairs of the store are made of red oak, while the counters and showcases are of cherry.

Passing to a more detailed description of the different features of the arrangement, it is to be observed that the shelving on the right-hand side of the store under the gallery, with the exception of two sections, is filled with boxes, the fronts of which are covered with green billiard cloth, each box having samples on front of the goods contained within. One of these boxes is shown in Fig. 311. The goods on this side of the store are divided between the nine sections as follows:

Section 1. Shutter Bars, Sash Fasts, Sash Lifts, Sash Pulleys, Locks and Knobs, &c.

Section 2. Eagle Locks and Locks and Knobs.

Section 3. Padlocks, Door Butts, Locks and Knobs, Keys.

Section 4. Coat and Hat and Wardrobe Hooks, Door Latches and Pulls, Base Knobs, Door Plates, Chest Handles, Measuring Tapes, Cupboard Catches, Window Springs, &c.

Section 5. Shutter Knobs, Upholsterers' Nails, Molasses Gates, Pulleys, Snaps, Bull Rings, Ox Balls, Wrought Iron Goods, Saw Sets, Plane Irons, Dividers, &c.

Section 6. Curtain Rings, Ferrules, Bright Wire Goods, Sash Rollers, Gate Hinges and Latches, Screw-Drivers, Wrenches, Picture Knobs, Nails and Hooks, Foot Scrapers, Spring Hinges, Hog Rings and Rings, &c.

Section 7. Chalk and Masons' Lines, Screws in gross packages, Cartridges, &c., and the following goods in tin boxes, the fronts painted green: Tacks in papers and bulk, Wire Nails and Brads, Blued, Brass and Nickel-Plated Screws, &c.

Section 8. Carpet Stretchers, Nail Pullers, Box Scrapers, Oilers, Chisel and other Handles, Shelf Brackets, &c.

Section 9. In wooden boxes, fronts painted green: Tobacco Boxes, Match Safes, Stove Bolts, Rivets and Carriage Bolts not in Bolt case.

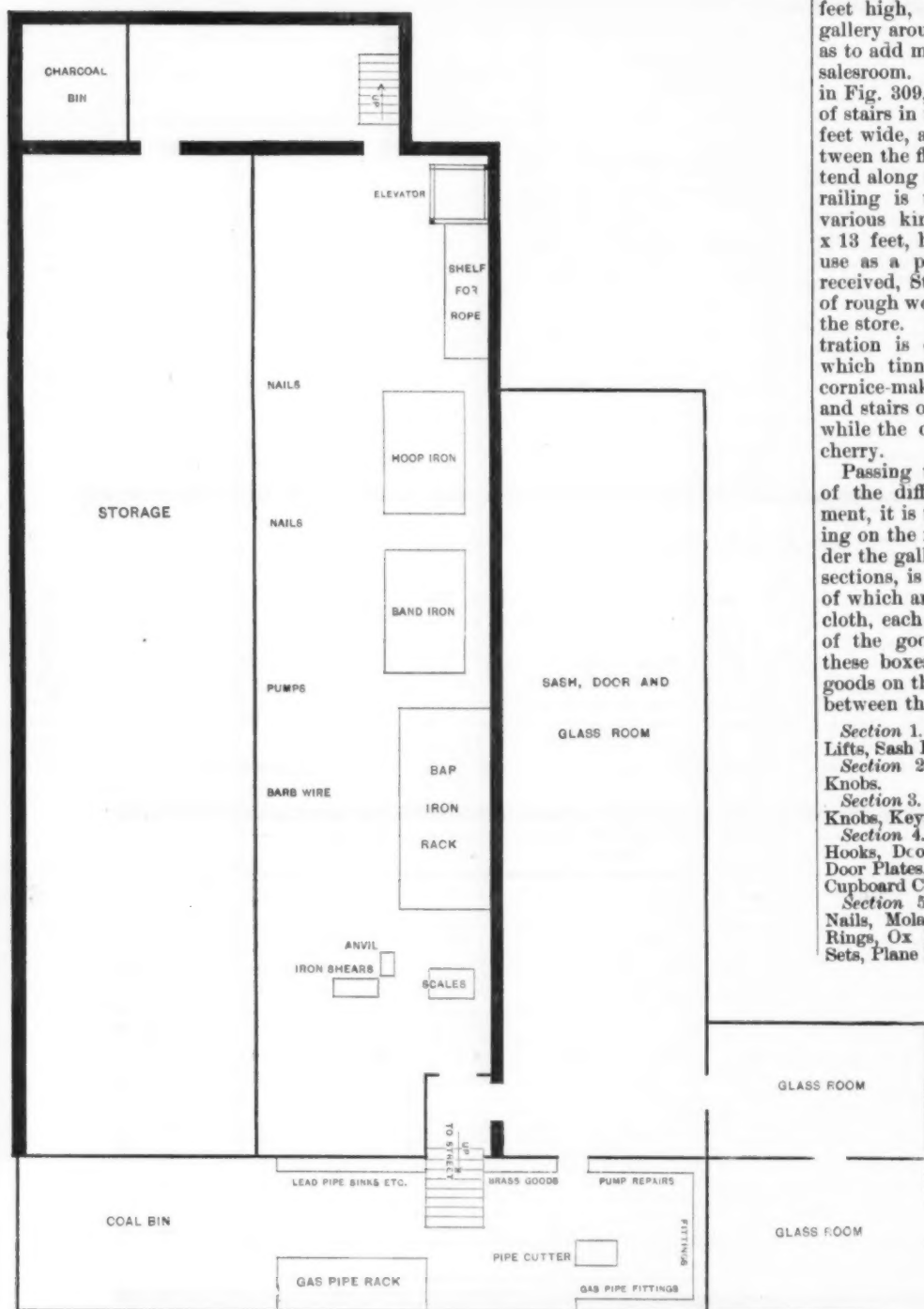


Fig. 310.—Diagram of Basement.

wholesale store, occupies a lot on Monroe street, 44 x 113 feet. Its general arrangement is represented in the accompanying illustrations, Figs. 308, 309 and 310. Not only is the storeroom a double store, but several lofts also are used in connection with it besides the basement under it and under two adjoining stores, as shown in Fig. 310. The arrangement of the store floor is given in the diagram Fig. 308. In this it will be seen that large and attractive show windows are secured, the center windows have a front of 19 feet and floor

windows are carpeted, while the middle one is covered with oil cloth. The window on the left of the entrance is furnished with plate glass shelves supported by brackets, the shelves being filled with Britannia, Granite and Decorated Pearl Agate Ware, Tea and Coffee Pots, &c., the floor being occupied with a variety of Japanned Ware, Coal Vases, &c. The window on the opposite side is devoted to a display of Hardware, of which a large variety of Tools and miscellaneous goods are exhibited. A good deal of care and

The Cutlery showcase near the front of the store on this side is devoted to Pocket Cutlery. The bottom of the showcase is covered with red cloth and has an arrangement covered with green billiard cloth for a display of Pocket Cutlery in the center of the case, as shown in Fig. 312. This showcase is 8 feet long, 2 feet wide, 10½ inches high at front and 11½ inches high at back, inside measurement. The oval boards on which the Pocket Knives are placed are of the following sizes: The lower board 12 inches wide, 20 inches

long and 1½ inches high, the upper board being 6 inches wide, 12 inches long and 1½ inches high. The lower round boards are 16 inches in diameter and 1½ inches in

315 give front and rear views of counter near the front of the store, which is devoted to Tools, while a novel and striking arrangement of other goods is secured on

it will be seen that it is furnished with doors, one of which is shown open, disclosing six compartments for Saws, each 8 x 10 inches. The different sizes of Hand-Saws are thus accommodated, there being separate compartments for each size, with a slip pasted above giving the length of the Saw, its number and the number of teeth to the inch. The space, 13 inches wide the full length of the counter, serves a useful purpose in selecting goods. The showcases on top front the other way, as show in Fig. 314, on one of the prominent aisles of the store. The front of this counter and its two sides have green billiard cloth tacked on them, covering the whole space. Small moldings running vertically 10 inches apart divide this space into panels, in which are fastened samples of various kinds, arranged with a view to ornamentation. Thus samples of Chalk are attached to represent the number of the store, while other goods form stars and other decorative designs.

The fronts of the small drawers—Fig. 311—in which Shelf Hardware is kept, are all covered, as above stated, with green billiard cloth, on which samples are fastened. They are naturally attached in different ways, according to the style of goods to be sampled. For instance, Locks are fastened with round head nickel-plated Screws through the key-holes. Strikes are put on with Screws, and Keys are hung on No. 81 ¾-inch Sargent's Brass Coat Hooks. Knobs are fastened by two links of brass Jack Chain, one end of which is put through screw-holes in the Rose, while the other ends are hung on No. 81 ¾-inch Hooks. Padlocks are hung on No. 81 1-inch Hooks, and other goods are put on with Screws. No. 110 Screw Hooks, Blind Staples, Double-Pointed Tacks, &c., are used, according to the style of the goods. All Japanned Goods that have surfaces suitable have the numbers marked on them with gold ink. Brass Goods are marked with black ink, while others hav-

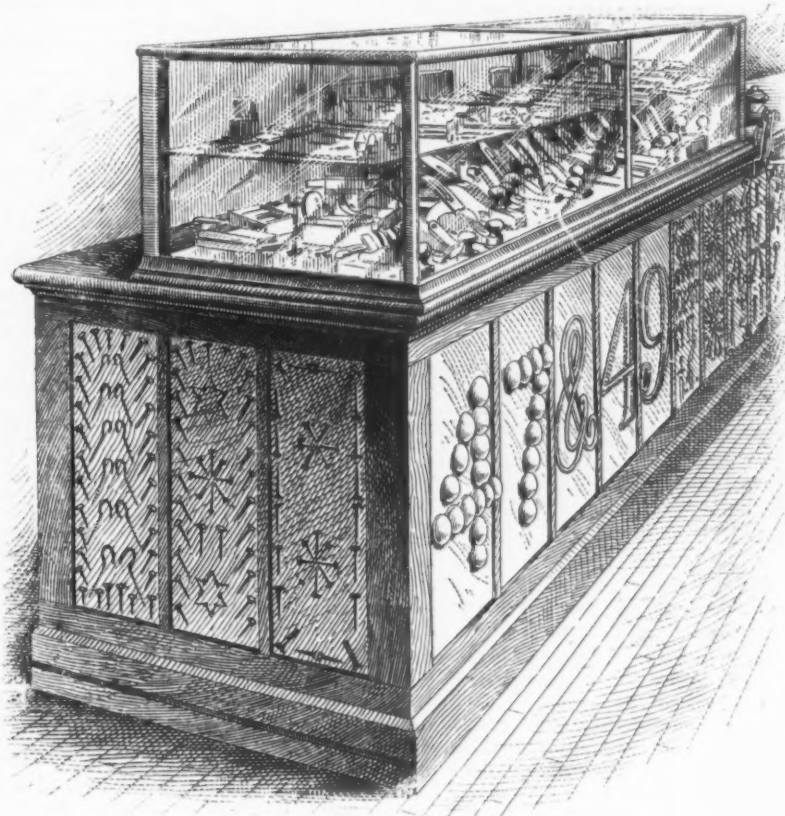


Fig. 314.—Front of Tool Counter.

high, the upper board being 8 inches in diameter and 1½ inches high. They are covered, as noted above, with green billiard cloth. Pocket Knives are arranged on these boards so as to secure an effective display. The number and prices are marked on the blade of each. They are marked in ink after having been given a coat of shellac varnish covering surface enough for the marks. This prevents the ink from rusting the blades. Other showcases used in the store are 2 feet wide and 18 inches high and have glass shelves about midway between the bottom and top. One of them is filled on the bottom with full assortments of Nicholson's Fancy Files, Oil Stones and Slips; the shelves being used for samples of Auger Bits, Twist Drills, Augers, Hollow Augers, &c. Table Cutlery and miscellaneous Knives, Rules and Revolvers occupy another case, the shelf being devoted to a variety of related lines.

The space under the balcony on the right-hand side toward the rear is occupied, as indicated in Fig. 308, by a Glass rack, which contains over 200 sizes. On the opposite side are bins containing Hollow-Ware, Dripping Pans, Fire Shovels, Shovels and Tongs, Maslin Kettles, Stove Boards, &c. On the floor near the gallery stairway are six open-top cans, Fig. 313, which are used for holding Pot Covers, and are made to fit the different-sized Covers. These Cover holders are 27½ inches high, and have an opening 2½ inches wide running from the top to within 6 inches of the bottom, and are made large enough so that the following sizes of Covers will drop in easily, namely: 9½, 9½, 10½, 10½, 11½ and 12 inch. Sample boards on the front of the balcony railing are covered with green cloth, and are filled with a variety of goods such as an extensive assortment of Butts, Bolts, Door Locks, Knobs, &c., complete Bronze and Bronzed Store Door Handles, Latches and Locks, Sash Fasteners, Letter-Box Plates, Electric Bell Pushes, &c. Figs. 314 and

the outside, with a very convenient arrangement for carrying a stock of Saws inside. This counter or Saw case is 19 feet long, 40 inches in extreme breadth, and

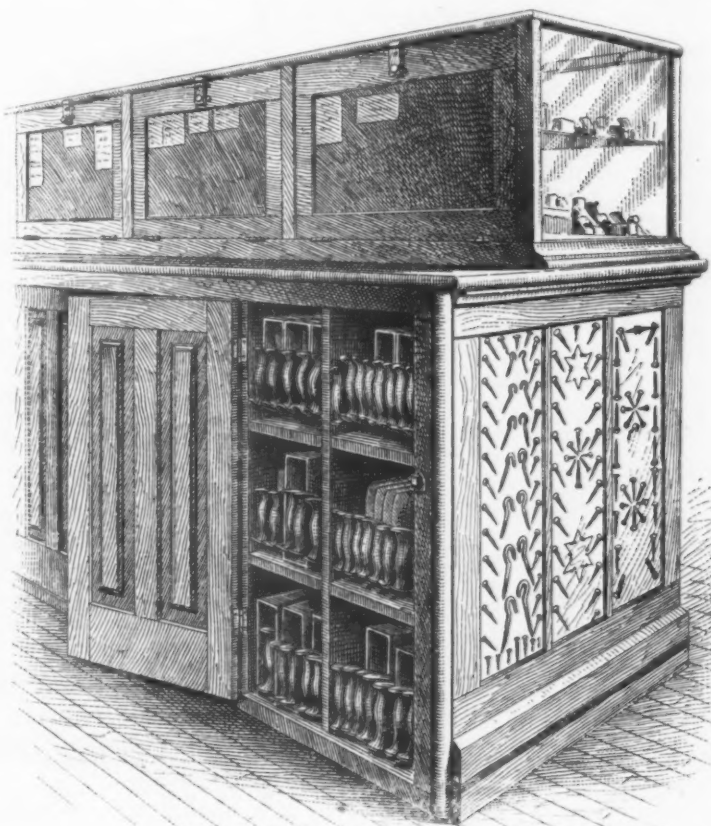


Fig. 315.—Rear of Tool Counter, Showing Saw Case.

3 feet to top of counter. Two showcases occupy the top, 18 feet long, 27 inches wide and 16 inches high. In Fig. 315 the rear of this counter is shown, from which

ing no surface suitable are marked on green tags tacked near them. Prices are marked on the right-hand side of drawers and boxes.

It will be seen by Fig. 311 that each drawer and box has a Washer $\frac{3}{4}$ inch outside diameter. This Washer is painted white on one side and red on the other, and is hung on a small wire hook on the upper right-hand corner of the front. When the red side is out it indicates that the drawer or box has inside some of the goods sampled, and when the white side

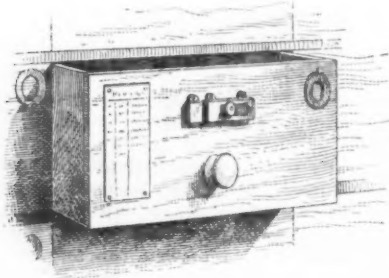


Fig. 311.—Shelf Box.

is out it shows that the stock is exhausted and needs replenishing.

The counter, Fig. 316, near the stairway to the gallery, contains bins which hold Barn Door Hangers, Strap and T Hinges, Machine Bolts, Crosscut Saw Handles, Solder and Soldering Coppers, Chain Links, Screw Hook and Strap Hinges, &c.

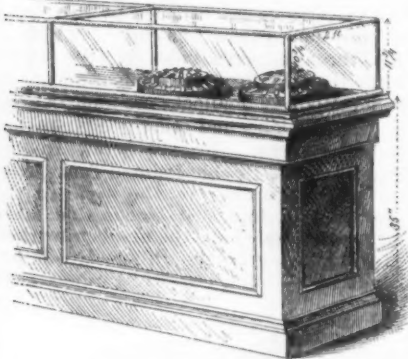


Fig. 312.—Counter and Cutlery Show Case.

On the top of this counter are piled Horse Nails, Toe Calks, Bench Vises, Heavy Hammers, Clothes-Line Reels, &c. On the rack above are Shovels, Spades, Scoops, Snow Shovels, Steel Goods, Post-Hole Diggers, &c. A Drill case occupies the end.

Axes are sampled as shown in Fig. 317 on a board 2 feet wide by 3 feet long, which lies lengthwise on the counter with one

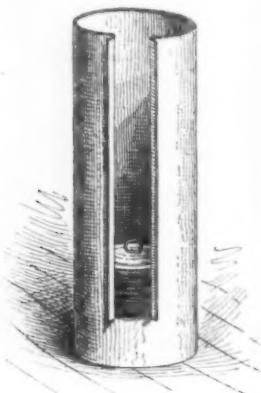


Fig. 313.—Pot Cover Case.

end elevated about 6 inches higher than the other. It has a strip nailed across it for the edge of the Axes to rest against, the whole being covered with green billiard cloth.

A feature of this store, which is most striking upon entrance, is the extent to

which sampling is carried. Even the large drawers in which heavy Tools are kept have a sample fastened on them, thus producing a pleasant effect, from the large variety of goods that is thus brought to view, and resulting doubtless in increased

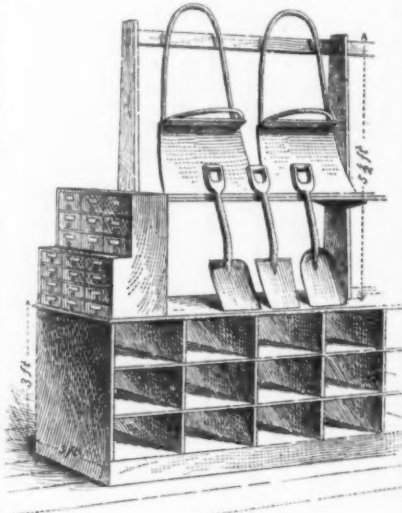


Fig. 316.—Counter, Steel Goods Rack, &c.

business, as customers are enabled to select without difficulty such articles as they may be in need of.

Space occupied in winter by base-burning coal Stoves will soon be filled with Gasoline Stoves, Refrigerators, Ice-Cream Freezers, Water Coolers, Filters, &c., and other seasonable goods arranged on tables, while the room now occupied by wood heating and platform and sample Stoves will be occupied by a Tinware stand now at the rear of office, together with other goods now stored upstairs. The rack for Steel Goods will then take the place of the Tinware stand. By removing other

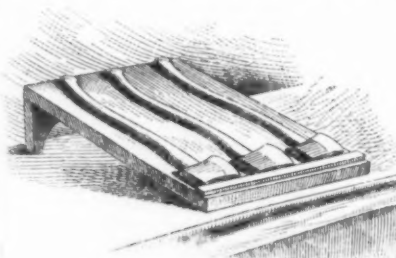


Fig. 317.—Sample of Axes.

Stoves space will be secured for Tubs, Pails, Churns, Washboards, &c.

In addition to the room shown on the diagram the company have on the second floor their Tinshop, and on the third floor they store light bulky goods, such as Shovels, Spades, Scoops, Steel Goods, Baskets, Bellows, Step-Ladders, Clothes Bars, Tubs, Pails, Tinware, Wheelbarrows, &c.

Exports.

PER BARK ALBERT RUSSELL, FEBRUARY 7, 1889, FOR BRISBANE, AUSTRALIA.

By E. T. Hopkins.—3 Stoves and 1 box of Parts for same.

By Welsh & Lea.—14 cases Iron Bolts, 1 case Carpet Sweepers.

By Collins Company.—128 dozen Axes, 3 dozen Bush Hooks, 40 dozen Hatchets.

By A. Field & Co.—2 dozen Handles, 3 dozen Spoons, 60 Stoves.

By R. W. Forbes & Son.—1 case Lampware.

By B. F. Avery & Sons.—25 packages Plow Parts.

By Lazarus & Rosenfeld.—8 cases Slates, 1 case Hammers, 8 packages Axes, 15 packages Clothes Pins, 40 boxes Axes.

By V. Basanta.—20,000 Ammunition, 40 dozen Washboards, 40 dozen Hatchets, 37 dozen Saws, 9 sets Harness, 65 dozen Washboards, 4 gross Blacking, 12 Scales, 6 dozen Awns and Hafts, 18 dozen Cow Bells.

By Coombs, Crosby & Eddy.—2 $\frac{1}{2}$ dozen Saws, 30 dozen Edge Tools, 12 dozen Axes, 4 dozen Carpenters' Tools, 12 Stepladders, 1 dozen Railroad Barrows, &c.; 3 $\frac{1}{2}$ dozen Agricultural Tools, 1-24 gross House-Furnishing Goods.

By R. W. Cameron & Co.—3 Stoves and 1 box Parts for same, 12 dozen Axes, 12 dozen Picks, 6 dozen Saws, 12 dozen Stoves, 36 dozen Hoes, 32 dozen Axes, &c., 3141 pounds Axes, 500 Broom Handles, 3 cases Grindstones, 12 dozen Washboards, 10 boxes Clothes Pins, 4 dozen Tubs and Pails, 12 dozen Hammers, 1200 pounds Nails, 1 dozen Handles, 1 case Guns.

By H. W. Peabody & Co.—3 cases Carriage-Ware, 2500 feet Hose, 12 cases Axes, 5 cases Hardware, 1 case Lampware, 3 cases Hardware, 1 case Agricultural Implements, 1 $\frac{1}{2}$ gross Axle Grease, 36 dozen Handles, 2 cases Picks, 2 cases Lampware, 1 bundle Pumps, 27 packages Hardware.

By A. S. Lascelles & Co.—3 cases Grease, 8 cases Tacks, 1 case Nails, 15 dozen Braces, 17 cases Handles, $\frac{1}{2}$ dozen Scales, 3 cases Hardware, 1 gross Locks, 100 Boxes Clothes Pins, 35 bundles Washboards, 2 cases Hardware, 2 dozen Braces, 1 bundle Brooms, 400 pounds Oil Stoves, 3 Stoves, 20 Oil Stoves, 6 dozen Lemon Squeezers, 16 dozen Axes, 3 dozen Picks, 3 cases Hardware, 6 dozen Axes, 48 dozen Hatchets, 5 cases Hardware.

By Arkell & Douglas.—15 boxes Hardware, 21 cases Handles, 267 dozen Axes, 154 dozen Hatchets, 840 dozen Handles, 1 case Saws, 4 packages Hardware, 100 boxes Clothes Pins, $\frac{1}{2}$ dozen Braces, 11 Trucks, 1 crate Sifters, 10 cases Hardware, 2 gross Axle Grease, 23 dozen Hammers, 100 pounds Oil Stoves, 1 case Air Guns, 6 gross Shade Rollers, $\frac{1}{2}$ dozen Paint Mills, $\frac{1}{2}$ dozen Wringers, 2 cases Bench Screws, 1 gross Blacking, 4 cases Choppers, 1 dozen Scales, 5 cases Hardware, 2 packages Bolts, $\frac{1}{2}$ barrel Blocks, 3 cases Lamp Goods, $\frac{1}{2}$ dozen Ladders, 29 cases Hardware, 100 pounds Nails, 1 crate Wheels, $\frac{1}{2}$ dozen Churns, 1 barrel Hose, 1 box Door Checks, 1 case Upsetters, 10 cases Hardware, 10 cases Agricultural Implements, 5 packages Hardware, 219 gross Wicks, 3 cases Tools, 6 dozen Traps, 34 packages Carriage-Ware, 50 boxes Clothes Pins, 12 cases Clocks, 1 case Tinware.

PER BARK GAERWEN, FEBRUARY 7, 1889, FOR EAST LONDON.

By New Home Sewing Machine Company.—48 Hand Machines.

By W. H. Crossman & Bro.—57 cases Plow Parts, 60 cases Plow Parts.

By Coombs, Crosby & Eddy.—148 Plows and Parts, 2200 pounds Nails, 1 dozen Meat Cutters, 7 dozen Axes, 24 dozen Axe Handles, 6 Road Scrapers, 17 dozen Axes, 130 dozen Carpenters' Tools, 29 pounds Sash Cord, 7 dozen Sash Fasteners, 1520 pounds Sash Weights, 3 Sand Stones.

FOR DELAGOA BAY.

24 Plows, 50 dozen Edge Tools, 30 dozen Brooms, 22 dozen Pick and Axe Handles, 6 dozen Saws, 12 dozen Hammers, 4 dozen Clocks, 5 dozen Handled Axes, 6 Scales, 13 pounds Sash Cord, 4 dozen Sash Fasteners, 950 pounds Sash Weights.

PER BRIG GEORGIE, FEBRUARY 13, 1889, FOR PORT ELIZABETH, SOUTH AFRICA.

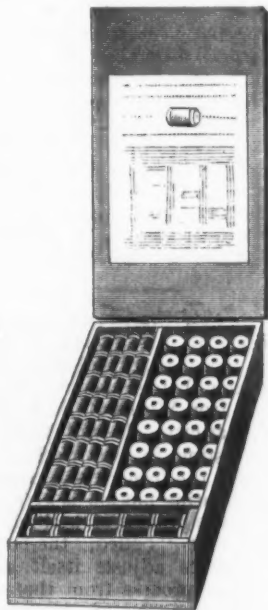
By Arkell & Douglas.—21 cases Plows, 25 cases Agricultural Implements, 16 dozen Picks, 80 dozen Handles, 150 dozen Brooms, 93 kegs Nails, 61 cases Axes, 10 dozen Wrenches, 3 dozen Saws, 240 Broom Handles, 10 boxes Clothes Pins, 6 dozen Washboards, 10 boxes Clothes Pins, 60 dozen Brooms, 30 dozen Handles, 4 cases Hardware, 6 dozen Hammers, 16 Plows, 1 dozen Sewing Machines, 3 cases Scales, 1 case Plow Wings, 8 dozen Hammers, 16 pounds Sash Cord, 1 dozen Churns, 1 dozen Sewing Machines, 1-6 dozen Washers, 1-6 dozen Mangles, 24 kegs Nails, 10 boxes Sash Weights, 40 pounds Sash Cord.

By Corner Bros. & Co.—2 case Agricultural Implements, 1 case Sash Cord

A. J. Jordan, of Sheffield and St. Louis, manufacturer of fine Cutlery, reports a steadily increasing business. His trade in Razors is assuming large proportions, and he informs us that his AAA1 Razor, or what is commonly known as Triple A1, is steadily growing in favor, and, in fact, has become one of his leaders. The policy he has followed in the manufacture of this Razor is to make it a first-class article, and by the use of the best steel and careful workmanship he says he has built up quite a reputation for it, the result of which is that he is daily in receipt of mail orders for this specialty.

Spooled Wire.

Malin & Co., Cleveland, Ohio, the well-known manufacturers of spooled wire, have lately introduced an article to the trade which they call "A Retail Stock of Spooled Wire." It is represented in the accom-



Retail Stock of Spooled Wire.

panying illustration. It consists of a box containing 147 spools of wire, the box being tastefully painted, furnished with hinged cover and partitioned off to hold the various sized spools. This enables the retailer to carry a small and well assorted stock of brass, copper and annealed and tinned steel wires, varying in gauge from No. 18 to No. 34. The contents of the case are assorted according to the extensive experience of the manufacturers, who probably are in a better position to judge on this point than retailers who have not handled the goods. It is obvious that the wire thus put up in assorted cases has the well-known advantages possessed by their spooled wire, being easy to handle, not liable to tangle, &c. The outer layer of the wire on the spool is coated with shellac, preventing it from rusting or tarnishing, and all spools containing a quarter pound or more are stamped with the number of feet on the spool in addition to the gauge of the wire.

The Chicago Horseshoe Company.

A complete plant is now being erected for the manufacture of horseshoes at East Chicago, Ind., by the Chicago Horseshoe Company, whose main office is in room 535, Rookery Building, Chicago. The officers of the company are as follows: Geo. W. McCook, president; Edward L. Lamb, general manager; Zenas Burns, secretary and treasurer. The plant will consist of a rolling mill and a combination of special horseshoe machinery capable of turning out from 1000 to 2000 kegs of horseshoes daily, with facilities for the enlargement of the productive capacity of the works as the trade secured may warrant. The rolling mill will contain one 22-inch train of rolls and one 12-inch train, with two furnaces to prepare the material for them. Scrap will be the principal material used, embracing both iron and steel. For a special class of shoes it is intended to use combined iron and steel under the Wheeler patents. The product of the works will be shoes of standard patterns, the officers of the company believing that it is well to avoid the

costly and unsatisfactory experience of those who have attempted to make innovations in the forms of horseshoes. They base their hope of building up a profitable business on the character of their machinery, which they believe will enable them to manufacture shoes much cheaper than can be done with other machines.

The machinery is the invention of a man who has had 20 years' practical experience in the manufacture of horseshoes, and those who are interested in the company speak most enthusiastically of its capabilities. A description of it has not yet been made public, but it is asserted that it operates somewhat like the combination of stamps used in dressing ores, so that additions to its capacity are easily made. Each section of the machine is expected to make a finished shoe in four seconds, punched, swedged, concaved and ready for the market. In punching the shoes a wheel or cylinder will be used which is 8 feet in diameter, having punches protruding from its periphery, and as it revolves over the shoes the holes are made with perfect exactness in the proper places. The rapidity with which the product is turned out and the completion of the entire work by machinery are relied upon to reduce the cost of manufacturing shoes. The vicinity of Chicago was selected for the location of these works partly because of its facilities for distributing the product over a very large section of the country and partly because the materials to be used can be had at lower prices than at any other good manufacturing point. The building now being erected for the works will be 700 feet long by 80 feet wide. The construction of the machinery is well under way, and the company expect to be in operation within 90 days.

The Grand Oil Heater.

The A. F. Shapleigh Hardware Company, St. Louis, Mo., are offering to the trade the heating stove for burning oil



The Grand Oil Heater.

which is known under the name of Grand, and represented in the accompanying illustration. It is constructed of sheet iron, has ample mica illumination and is provided with a foot rail, which encircles the base.

The company allude especially to its heating qualities, and the small expense at which it can be run.

New Arctic Ice-Cream Freezer.

The accompanying illustration represents a freezer put on the market by the White Mountain Freezer Company, Nashua, N. H., with branch office 99 Chambers street, New York. It has been put on the market to meet the demand for a low-priced freezer, which would at the same time be of fair quality. It will be observed that the gearing is completely cov-



Arctic Ice Cream Freezer.

ered, so as to prevent anything from getting between the cogs. The tub is bound with galvanized-iron hoops, and constructed with a view of obtaining the desired result with the smallest possible quantity of ice. The can is described as made of the best quality of charcoal tin plate, with cast-iron top and bottom nicely galvanized. Special emphasis is laid on the hinged top, which is also detachable, a feature which is alluded to as not found in other freezers. The gear frame can be tipped back from the edge of the tub, as shown in the cut, allowing the can to be removed or contents examined, or it can be entirely removed if desired. Special attention is called by the manufacturers to the low price at which this freezer is offered, and they also call attention to its quality.

The following figures convey some idea of what it will cost to light the Paris Exhibition: It is estimated that 900 hours of service will be required, and on this basis the following prices have been adopted: For each glow lamp of 16 candle-power, 60 francs; 10 candle-power, 45 francs; for each arc light of 500 candle-power, 500 francs; 1000 candle-power, 750 francs. The motive power will be furnished at the following rates: Up to 500 horse-power-hours, 50 cents per horse-power-hour, and beyond 500 horse-power-hours, 40 cents per horse-power-hour. The total illuminating power of electric lamps is estimated at 1,600,000 candles; and the number and types of lamps at present decided upon are as follows: Jablochhoff candles, 123; arc lamps, 1017; glow lamps, 9080; sun lamps, 16.

Bicycle Padlocks.

The illustration herewith given represents one-third size an arrangement for securing bicycles, tricycles, &c., which is manufactured by the Ames Sword Com-



Bicycle Padlock, One-Third Size.

pany, Chicopee, Mass. The 1-inch padlock has eight levers, two keys, and the chain is 12 inches long. The locks are described as worked with a double-bitted key, as shown, which turns indefinitely both ways, so that they are not liable to get out of order or be picked. The chain is furnished either in brass or nickel-plated. The elegance of the workmanship and the beauty, lightness and strength of the article, together with the low price at which it is offered, are the points made in regard to it. It will be observed that there is a clevis drop fastened through the center of the padlock, which turns easily upon it.

The Sunshine Dauber.

The illustration given below represents the Sunshine dauber, which is put on the market by the Thompson Mfg. Company, Lansingburg, N. Y., and replaces their former pattern of coil handle dauber, which they have discontinued making. The special points in regard to this dauber are that the handle is of such a shape as to secure convenience in operation and prevent the knuckles from coming in contact with the shoe, and that the brush part is a solid knot of bristles. The knot is also alluded to as the right size and shape to spread the blacking on the part of the shoe to be polished without daubing the uppers. The quantity of bristles in each brush is referred to as sufficient, if doubled in the middle and drawn into a common shallow wooden block, to make



The Sunshine Dauber.

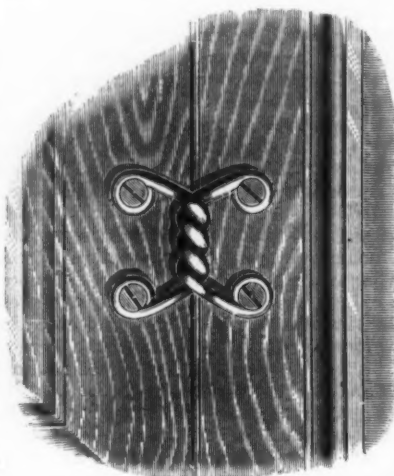
two old style brushes and some bristles over. The brush is further described as waterproof, and the bristles can be washed and dried again without injury. The knot also is somewhat larger than in their former coil handle pattern. The durability of the dauber and the low price at which it is offered are further points made in regard to it.

It is announced that the strike of the workmen employed in the limestone quarries in the Mahoning Valley, Ohio, which has been in progress for several weeks, is broken, the men employed at two of the quarries having returned to work at the old wages, while the places of those who refused to return to work have been filled

with new men. A majority of the men were opposed to striking, but were persuaded by the leaders. Several blast furnaces were compelled to bank.

The Perkins Hinge.

This hinge is made under a patent, January 1, 1889, and is manufactured by the New Haven Wire Goods Company, New Haven, Conn. It is designed more especially for use as a cheap hinge for crates, boxes, &c., rather than for doors, although it can be used to some advantage for this purpose. It is pointed out that, unlike

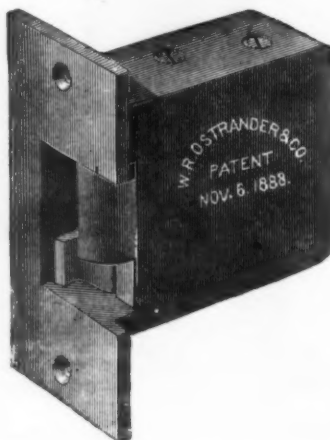


The Perkins Hinge.

cast hinges, this hinge will not break, while it can be produced at a lower cost than others. A variety of sizes will be furnished suitable for light or heavy work. The hinges are made automatically from steel wire. The reasonable figures at which they are offered and their special adaptation to the purposes for which they are intended are alluded to, and it is thought by the manufacturers that, as it is a decided improvement over the cast or wrought hinges now in use, it will readily find a prominent place in the market for such goods.

The Ostrander Door Opener.

This door opener, patented November 6, 1888, and manufactured by W. R. Ostrander & Co., 21, 23 and 25 Ann street,



The Ostrander Door Opener.

New York, embodies some new features, and is illustrated in the accompanying engraving. It is so constructed as to be operated either by compressed air through a pneumatic tube or by electricity with batteries. The manufacturers call atten-

tion to the fact that the movement in a gravity one, and that it is devoid of any delicate springs or delicate mechanism, so that it is not liable to get out of order. It is protected by metal sides to prevent dirt, plaster or chips from interfering with its operation. The movable bolt shown in the cut is a steel drop forging, and the other parts are described as made of the best wrought iron and steel. Especial care has been taken in the construction of the door opener, so as to make it of requisite quality and secure its satisfactory operation. The point is also made that it is positive in operation, and withstands wind and other force and cannot be jarred open. Its mechanism also is such that the opening of the door is not interfered with by pressure upon it, as in the case of other similar devices. The operation of this article has been tested in practical use since the patent was applied for.

A Pittsburgh ironworker named Anthony Barker is the inventor of what he terms an undulating puddling furnace, which is now being constructed at the Kensington Iron Works of H. Lloyd, Son & Co., in that city. It will probably be ready for testing in two weeks. As its name implies, the furnace is so constructed that an undulating motion is given to the iron during the process of boiling. When a heat is to be "balled," the bottom of the new furnace adjusts itself automatically, and the process from that out differs but little from the present method of puddling. The inventor claims that the first cost will only be a little over that of the old style, while it will turn out at least double the weight of iron with one more man. The Barker Undulating Furnace Company, Limited, with a capital of \$20,000, have been incorporated to push the new furnace. Their officers are: A. W. Tyler, chairman; H. Lloyd, Son & Co., general managers; Jeremiah Miller, vice-chairman; James B. Booth, secretary; A. G. Holmes, treasurer, and Anthony Barker, general manager.

Bids for the construction of a submarine torpedo-boat were opened at Washington on Friday. The Columbian Iron Works, of Baltimore, offered to build a vessel of 90 tons under three bids, as follows: \$150,000, guaranteeing a speed of 12 knots on the surface and 9 knots submerged, with 19 hours' power endurance on the surface and one hour submerged; \$115,000, guaranteeing 10 knots on the surface and 8 hours submerged and 15 hours' endurance on the surface, and \$100,000, guaranteeing nine hours on the surface and seven hours submerged. George C. Baker, of Des Moines, Iowa, offered to construct a vessel of 40 tons, with no guarantees except that she could be handled easily either on the surface or submerged.

The financial troubles which have overtaken the Ohio and Western Iron Company form a topic for remark by Western correspondents. A writer at Columbus, Ohio, says a strange fatality has been connected with the property out of which the Ohio and Western grew. James T. Burkey, who committed suicide in a St. Louis hotel, was harrassed to the last by thoughts of the fortunes he had lost among the Hocking hills. George Lee, who killed himself in a New York hotel, was haunted in his dying hour by the specter of ruin in the coal fields of Ohio. Royal M. Pulsifer, the founder of the Boston Herald, took his own life some months ago, and, though he had many other business complications to pull him down, he, too, had sought the fabled pot of gold that was said to be buried at the foot of the Western rainbow.

CURRENT HARDWARE PRICES.

FEBRUARY 20, 1889.

Note.—The quotations given below represent the Current Hardware Prices which prevail in the market at large. They are not given as manufacturers prices, and manufacturers should not be held responsible for them. In cases where goods are quoted at lower figures than the manufacturers name, it is not stated that the manufacturers are selling at the prices quoted, but simply that the goods are being sold, perhaps by the manufacturers, perhaps by the jobbers, at the figures named.

Ammunition.—

Caps, Percussion, 1000—	
Hicks & Goldmark's	
F. L. Waterproof, 1-10's.....	30¢
E. B. Trimmed Edge, 1-10's.....	25¢
E. B. Grd. Edge, Cent. Fire.....	25¢
Double Waterproof, 1-10's.....	31¢
Musket Waterproof, 1-10's.....	50¢
G. D.	28¢
S. B.	30¢

Union Metallic Cartridge Co.	
F. C. Trimmed.....	50¢
F. L. Ground.....	25¢
Cent. Fire Ground.....	25¢
Dbl. Waterproof.....	31¢
Dbl. Waterproof, in 1-10's.....	31¢
S. B. Genuine Imp.orted.....	45¢
Eley's E. B.	54¢
Eley's D Waterproof, Central Fire.....	1.00

Cartridges.	
Rim Fire Cartridges.....	50¢
Rim Fire Military.....	15¢
Cent. Fire Pistol and Rifle.....	25¢
Cent. Fire, Military and Sporting.....	15¢

Blank Cartridges, except 22 and 32 cal., additional 1¢ on above discounts.	
Blank Cartridges, 22 cal., 1.75.....	2¢
Blank Cartridges, 32 cal., 3.50.....	2¢
Primed Shells and Bullets.....	15¢
B. B. Caps, Round Ball, 1.75.....	2¢
B. B. Caps, Con. Ball, Swgd., 2.00.....	2¢

Primers.	
Berdan Primers, 1.00.....	2¢
B. L. Caps (for Sturtevant Shells) 1.00.....	2¢

All other Primers, 1.20.....	2¢
------------------------------	----

Shells—	
First quality, 4, 8, 10 and 12 gauge.....	25¢
First quality, 14, 16 and 20 gauge (10 list).....	30¢
Star, Club, Rival and Climax brands, 10 and 12 gauge.....	30¢
Club, Rival and Climax brands, 14, 16 and 20 gauge.....	30¢
Seibold's Comb. Shot Shells.....	15¢
Brass Shot Shells, 1st quality.....	60¢
Brass Shot Shells, Club, Rival, Climax.....	55¢
1 X L, 10 and 12 gauge.....	40¢
"Special," 16 gauge.....	30¢
"Special," 10 and 12 gauge.....	40¢
Fowler's Pat.....	35¢

Shells Loaded—	
A. M. Co. List No. 19, 1887.....	20¢

Wads—	
U. M. C. & W. R. A.—B. E., 11 up.....	2.00
U. M. C. & W. R. A.—B. E., 9&10.....	2.30
U. M. C. & W. R. A.—B. E., 7&8.....	2.60
U. M. C. & W. R. A.—P. E., 11 up.....	3.00
U. M. C. & W. R. A.—P. E., 9&10.....	3.10
U. M. C. & W. R. A.—P. E., 7&8.....	3.40
Eley's B. E., 11 up.....	1.75
Eley's P. E., 11 up.....	2.80

Anvils.—	
Eagle Anvils, 10¢.....	20¢
Peter Wright's.....	94¢
Armstrong's Mouse Hole.....	84¢
Armstrong's Mouse Hole, Extra.....	1.14
Trenton.....	94¢
Wilkinson's.....	94¢
J. & Riley Carr, Pat. Solid.....	1.14
Moore & Barnes Mfg. Co.....	33¢

Anvil Vise and Drill—	
Millers Falls Co., 18.00.....	20¢
Cheney Anvil and Vise.....	25¢
Allen Anvil and Vise.....	3.00

Apple Parers—	
Advance.....	50¢
Antrim Combination.....	50¢
Baldwin.....	50¢
Champion.....	75¢
Eureka, 1888.....	17.00
Family Bay State.....	12.00
Gem.....	5.25
Gold Medal.....	4.00
Hudson's New '88.....	3.75
Ideal.....	4.75
Improved Bay State.....	30.00
Little Star.....	5.00
Monarch.....	13.50
New Lightning.....	5.50
Orion.....	4.00
Penn.....	4.00
Perfection.....	4.00
Pomona.....	4.00
Rocking Table.....	6.00
Turntable.....	4.50
Victor.....	13.50
Waverly.....	4.50
White Mountain.....	4.50
72.....	4.25
76.....	5.75
78.....	5.00

Augers and Bits—	
Douglas Mfg. Co.....	
Wm. A. Ives & Co.....	70¢
Humphreysville Mfg. Co.....	
French, Swift & Co. (F. H. Beecher, Cook's, Douglas Mfg. Co., set, 55¢	
Cook's, N. H. Copper Co. 50¢	
Ives' Circular Lip.....	60¢
Patent Solid Head.....	30¢
C. E. Jennings & Co., No. 10, extension lip.....	40¢
C. E. Jennings & Co., No. 30, set.....	60¢
C. E. Jennings & Co., Auger Bits, 32¢	
quarters, No. 5, 35¢; No. 30, 35¢	
Lewis' Patent Single Twist.....	45¢
Jennings' Augers and Bits.....	25¢
Imitation Jennings' Bits.....	60¢
Pugh's Black.....	30¢
Car Bits.....	35¢
L'Hommedieu Car Bits.....	15¢
Forstner Pat. Auger Bits.....	10¢

Hollow Augers—

Ives' small, 18; large, 22.....	25¢
French, Swift & Co.....	25¢
Douglas.....	25¢
Bonney's Adjustable, 1/2 doz.....	40¢
Stearns.....	20¢
Ives' Expansive, each \$4.50.....	50¢
Universal Expansive, each \$4.50.....	30¢
Wood's.....	25¢

Expansive Bits—

Clarks' small, 18; large, 22.....	35¢
Ives' No. 4, 1/2 doz.....	40¢
Swan's.....	40¢
Stearns, No. 1, 22¢; No. 2, 22¢.....	35¢
Stearns' No. 2, 24¢.....	20¢

Gimlet Bits—

Common.....	27¢
Diamond.....	1.10
"Bee".....	25¢
Double Cut, Sheppardson's.....	45¢
Double Cut, Cl. Valley Mfg. Co.....	30¢
Double Cut, Hartwell's, 1/2 doz.....	85¢
Double Cut, Douglas.....	40¢
Double Cut, Ives.....	60¢

Bit Stock Drills—

Morse Twist Drills.....	50¢
Standard.....	50¢
Cleveland.....	50¢
Syracuse, for metal.....	50¢
Syracuse, for wood (wood list).....	30¢
Williams' or Holt's, for metal.....	50¢
Williams' or Holt's, for wood.....	40¢

Ship Augers and Bits—

L'Hommedieu's.....	15¢
Watrous.....	15¢
Snell's.....	15¢
Snell's Ship Auger Pat'n Car Bits.....	15¢

Awl Hafts—

Sewing, Brass Fer. 1/2 gr.....	35¢
Pat. Sewing, Short, 1.00 doz.....	40¢
Pat. Sewing, Long.....	1.20
Pat. Peg, Plain Top, 1/2 gr.....	1.00
Pat. Peg, Leather Top, 1/2 gr.....	1.20

Awls, Brad Sets, &c—

Awls, Sewing, Common 1/2 gr.....	1.70
Awls, Should. Peg, 1/2 gr.....	2.45
Awls, Pat. Peg, 1/2 gr.....	63¢
Awls, Shouldered Brad, 2.70 gr.....	35¢
Awls, Handled Scratch, 1/2 gr.....	75¢
Awls, Handled Scratch, 1/2 gr.....	35¢
Awls, Socket Scratch, 1/2 doz.....	1.50

Awl and Tool Sets—

Alken's Sets, Awls and Tools, No. 20, 1/2 doz.....	10.00
Fray's Adj. Tool Hds., Nos. 1, 12; 2, 18; 3, 12; 4, 8.....	25¢
Miller's Falls Adj. Tool Hds., Nos. 1, 12; 2, 18.....	25¢
Henry's Combination Haft, 1/2 doz.....	6.50
Brad Sets, No. 42, 10.50; No. 43, 12.50.....	70¢
Stanley's Excelsior, No. 1, 7.50; No. 2, 8.00; No. 3, 8.50.....	30¢

Axes—

Makers' and Special Brands—	
First quality.....	10.00
Others.....	5.50

Axle Grease—

Fraser's.....	4¢
Fraser's, in boxes.....	8¢
Dixon's Everlasting, in bxs.....	1.20
Dixon's Everlasting, 10-b pails, ea. 85¢	
Lower grades, special brands.....	5.50

Axles—

No. 1.....	4¢
Nos. 7 to 18.....	50¢
Nos. 19 to 22.....	60¢
National Tubular Self-Oiling, Standard Farm (1 to 5) and Special Farm (A1 to A5).....	33¢
Over 10 sets.....	33¢

Bag Holders—

Sprengle's Pat.....	15¢
---------------------	-----

Balances—

Spring Balances.....	50¢
Common 24 lb.....	1.50
Chatillon's Spring Balances.....	50¢
Chatillon's Circular Spring Balances.....	60¢

Bells—

Hand—

Light Brass.....	70¢
Extra Heavy.....	60¢
White Metal.....	108¢
Silver Chime.....	33¢
Globe (Cone's Patent).....	25¢

Door—

Gong, Abbe's.....	33¢
Gong, Yankee.....	45¢
Gong, Barton's.....	40¢
Crank, Taylor's.....	35¢
Crank, Brooks'.....	50¢
Crank, Cone's.....	10¢

Crank, Connel's.....	20¢
Lever, Sargent's.....	60¢
Lever, Taylor's Bronzed or Plated.....	net
Lever, Taylor's Japanned.....	25¢
Lever, R. E. M. Co.'s.....	50¢
Pull, Brook's.....	50¢
Pull, Western.....	25¢

Cole—

Common Wrought.....	60¢
Western.....	20¢
Western, Sargent's list.....	70¢
Kentucky, "Star".....	20¢
Kentucky, Sargent's list.....	70¢
Dodge, Genuine Kentucky.....	70¢
Texas Star.....	50¢
Call.....	40¢
Farm Bells.....	3¢
Steel Alloy Church and School Bells.....	40¢

Hollows—

Blacksmiths'.....	50¢
Molders'.....	40¢
Hand Bellows.....	40¢

Belting, Rubber—

Common Standard.....	70¢
Standard.....	70¢
Extra.....	60¢
N. Y. B. & P. Co., Carbon.....	60¢
N. Y. B. & P. Co., Diamond.....	50¢

Bench Stops—

Morrill's.....	50¢
Hotchkiss'.....	50¢
Weston's, No. 1, 10; No. 2, 20.....	10¢
McGill's.....	30¢

Bits—

Auger, Gimlet, Bit Stock, Drills, &c., see Augers and Bits.	
-------------------------------------------------------------	--

Bit Holders—

Extension, Barber's, 1/2 doz.....	15.00
Extension, Ives, 1/2 doz.....	20.00
Diagonal.....	24.00
Angular.....	24.00

Blind Adjusters—

Domestic.....	3.00
Excelsior.....	10.00
Washburn's Self-Locking.....	20¢

Blind Fasteners—

Mackrell's, 1/2 doz.....	1.00
Van Sand's Screw Pat., 15¢ gr.....	60¢
Van Sand's Old Pat., 15¢ gr.....	55¢
Washburn's Old Patent.....	82¢
Merriman's.....	new list, net
Austin & Eddy No. 2008.....	80¢
Security Gravity.....	80¢

Blind Staples—

Barbed, 1/2 in. and larger.....	7¢
Barbed, 3/4 in.....	8¢

Blocks—

Cleveland Block Co., Mal. Iron.....	60¢
Moore's Novelty, Mal. Iron.....	50¢

Bolts—

Door and Shutter—

Cast Iron Barrel, Square, &c.....	70¢
Cast Iron Shutter Bolts.....	70¢
Cast Iron Chain (Sargent's list).....	65¢
Ives' Patent Door Bolts.....	60¢
Wrought Barrel.....	70¢
Wrought Square.....	70¢
Wrt Shutter, all Iron, Stanley's.....	60¢
Wrt Shutter, Brass Knob.....	40¢
Wrt Shutter, Sargent's list.....	60¢
Wrt Sunk Flush, Sargent's list.....	55¢
Wrt Sunk Flush, Stanley's list.....	50¢
Wrt B.K. Flush, Com'n.....	55¢

Carriage, Machine, &c.—

Com. list June 10, '84.....	75¢
Genuine Eagle, list Oct. '84.....	75¢
Phila. pattern, list Oct. '84.....	75¢

R.B. & W., old list

Machine, according to size.....	75¢
Bolt Ends, according to size.....	75¢

Tire—

Common, list Feb. 28, '83.....	70¢
P.C.B.N. Co.....	
Empire, list Feb. 28, '83.....	70¢
Phila., list Oct. '84.....	82¢
Keystone, Philadel., list Oct. '84.....	80¢
Norway, Phila., list Oct. '84.....	75¢
Am.S. Co.....	
Norway, Phila., list Oct. 16, '84.....	75¢
Eagle, Phila., list Oct. 16, '84.....	80¢
Phila., list Oct. 16, '84.....	82¢
Bay State, list Feb. 28, '83.....	70¢
R.B. & W., Philadel., list Oct. 16, '84.....	82¢
R.B. & W. Mfg. Co.....	70¢

Stove and Plow—

Stove.....	62¢
Plow.....	60¢
Am. S. Co. Stove, Annealed.....	62¢
R. B. & W., Plow.....	50¢
R. B. & W., Stove.....	62¢
R. E. Mfg. Co., Stove.....	62¢

Borax—

Without

Augers, Upright, Angular.....	50¢
Douglas.....	50¢
Snell's, Rice's Pat. 5.50.....	6.75
Jennings.....	6.75
Other Machines.....	2.35
Philips' Patent with Augers.....	7.00

How Pins—

Humason, Beckley & Co.'s.....	80¢
Sargent & Co.'s.....	17¢
Peck, Stow & W. Co.....	50¢

Braces—

Barber's, Nos. 10 to 16.....	50¢
Nos. 30 to 33.....	50¢
Nos. 40 to 63.....	50¢
Barker's, Nos. 8, 10 and 12.....	75¢
Plated, Nos. 8, 10 and 12.....	65¢
Osgood's Ratchet.....	40¢
Spofford's.....	50¢
Ives' New Haven Novelty.....	70¢
New Haven Ratchet.....	60¢
Barber Ratchet.....	60¢
Barbers.....	80¢
Spofford.....	80¢
Common Ball, American.....	1.10

Bartholomew's,

Nos. 25, 27 and 30.....

Cards—
Horse & Curry.....10&10@10&10&10
Cotton.....New list, Aug., 1888,
10@10&10
Wool.....New list, Aug., 1888,
10@10&10

Carpet Stretchers

Cast Steel, Polished.....\$ doz \$2.25
Cast Iron, Steel Points.....\$ doz 80¢
Socket.....\$ doz \$1.75
Bullard's.....25¢@25&10¢

Carpet Sweepers

Bissell No. 5.....\$ doz \$17.00
Bissell No. 7 New Drop Pan.....\$ doz \$19.00
Bissell, Grand.....\$ doz \$36.00
Grand Rapids.....\$ doz \$24.00
Crown Jewel, No. 1, \$18.00; No. 2,
\$19.00; No. 3, \$20.00
Magic.....\$ doz \$15.00
Jewel.....\$ doz \$17.00
Improved Parlor Queen, Nickel
\$ doz \$27.00

Improved Parlor Queen, Japanese

Excelsior.....\$ doz \$24.00
Parlor Queen.....\$ doz \$22.00
Parlor Queen.....\$ doz \$24.00
Housewife's Delight.....\$ doz \$24.00
Queen.....\$ doz \$16.00
Queen, with band.....\$ doz \$18.00
King.....\$ doz \$20.00
Weed, Improved.....\$ doz \$18.00
Hub.....\$ doz \$16.00
Cog-Wheel.....\$ doz \$22.00
Conqueror.....\$ doz \$22.00
Easy.....\$ doz \$22.00
Monarch.....\$ doz \$22.00
Goshen.....\$ doz \$18.00
Advance.....\$ doz \$18.00
Ladies' Friend, No. 1, \$ doz, \$15.00;
No. 2, \$ doz \$16.00
American.....\$ doz \$15.00
Grand Republic.....\$ doz \$35.00

Cartridges

See Ammunition.

Casters

Bed.....New list:
Plate.....55¢@55&5¢
Shallow Socket.....60¢@60&5¢
Deep Socket.....40&10¢
Yale Casters, list May, 1884.....30&10¢@40¢
Yale, Gem.....60¢@60&5¢
Martin's Patent (Phoenix).....45&10¢@50¢
Payson's Anti-friction.....60¢@60&10¢
"Giant" Truck Casters.....10&10¢@10¢
Stationary Truck Casters.....45&10¢

Cattle Leaders

Humason, Beckley & Co.'s.....70¢
Sargent's.....60¢@10¢
Hotchkiss.....30¢
Peck, Stow & W. Co.....50&10¢

Chain

Trace, 6½-10-2, exact.....50&10¢@50&10&5¢
Trace, 6½-10-3, exact.....50&10¢@50&10&5¢
Trace, 7-10-2, exact.....50&10¢@50&10&5¢
Trace, 7-10-3, exact.....50&10¢@50&10&5¢
Norse-Trace, Regular, 3¢ net
Log, Fifth, Stretcher, and other fancy
Chains, list Nov. 1, 1884
50&10¢@50&10&5¢

American Coil, in cask lots,
3-16 ¼ 5-16 ¾ 7-16 ¾ 9 ¾ 34
\$8.75 6.25 5.00 4.50 4.00 3.75 3.50
Less than cask lots, add ¼¢@¼¢
German Coil, list of June 20, 1887
50&10¢@50&10&5¢

German Halter Chain, list of June 20,
1887.....50&10¢@50&10&5¢
Covert Halter, Hitching and Breast
50&10¢
Covert Traces.....30&10¢
Oneida Halter Chain.....60¢@60&5¢
Galvanized Pump Chain.....\$ doz \$4.00
Jack Chain, Iron.....75¢@75&5¢
Jack Chain, Brass.....70¢@70&5¢

Chalk

White.....\$ gr 50¢
Red.....\$ gr 70¢
Blue.....\$ gr 85¢
White Crayons, \$ gr 12¢@12¢
See Lines.

Chalk Lines

See Lines.

Chisels

Socket Framing and Firmer,
P. S. & W.....75¢@75&10¢
New Haven.....75¢@75&10¢
Wetherby.....75¢@75&10¢
Mix.....75¢@75&10¢
Ohio Tool Co.....75¢@75&10¢
Douglas.....75¢@75&10¢
Buck Bros.....30¢
Merrill.....60&10¢@60&10&5¢
L. & I. J. White.....30¢@30&5¢

Tanged and Miscellaneous

Tanged Firmer.....40&10¢
Butcher's.....\$4.75@5.00
Spear & Jackson's.....\$5 to 2
Buck Bros.....30¢
Cold Chisels, \$ doz.....16@16¢

Chucks

Reach Pat.....each, \$8.00.....20¢
Morse's Adjustable, each, \$7.00, 20¢@20&5¢
Danbury.....each, \$6.00, 15¢@30&5¢
Syracuse, Balz Pat.....25¢

Clamps

Providence Tool Co.'s Wrought Iron.....25¢
Adjustable, Gray's.....20¢
Adjustable, Lambert's.....20¢
Adjustable, Snow's.....40&5¢
Adjustable, Hammers.....15¢
Adjustable, Stearn's.....20&10¢
Stearns' Adjustable Cabinet and Cor-
ner.....20&10¢
Cabinet, Sargent's.....00¢@10¢
Carriage Makers', Sargent's.....70&10¢
Eberhard Mfg. Co.....40&5¢@40&10¢
Warner's.....40&10¢@40&10&5¢
Saw Clamps, see Vises

Clips

Norway, A-zle, ¼ & 5-8.....55&5&5¢
2nd grade Norway Axle, ¼ & 5-16.....65&5¢
Superior Axle Clips.....60¢@60&5¢

Norway Spring Bar Clips, 5-16.....60&5&5¢
Wrought-Iron Felloe Clips.....\$ doz, 5¢
Steel Felloe Clips.....\$ doz, 5¢
Baker Axle Clips.....25¢

Cockeyes

50¢

Cocks, Brass

Hardware list.....40. & 10&2¢

Coffee Mills

Box and Side, list revised Jan. 1, 1888,
50&2¢
American, Enterprise Mfg. Co. 20&10¢@30¢
The "Swift," Lane Bros.....20&10¢

Compasses, Dividers, &c

Compasses, Calipers, Dividers, 70¢@70&10¢
Bemis & Call Co.'s Dividers.....80&5¢
Bemis & Call Co.'s Compasses & Cal-
ipers.....50&5¢
Bemis & Call Co.'s Wing & Inside or
Outside.....50&5¢
Bemis & Call Co.'s Double.....60¢
Bemis & Call Co.'s (Call's Pat. Inside) 30¢
Excelsior.....50¢
J. Stevens & Co.'s Calipers and Dividers
25&10¢
Starrett's Spring Calipers and Dividers
25&10¢
Starrett's Lock Calipers and Dividers
25&10¢
Starrett's Combination Dividers.....25&10¢

Coopers' Tools

Bradley's.....20¢
Barton's.....20¢@20&5¢
L. & J. White.....20&5¢
Alberston Mfg. Co.....25¢
Beatty's.....40¢@40&5¢
Sandusky Tool Co.....30¢@30&5¢

Corkscrews

Humason & Beckley Mfg. Co. 40¢@40&10¢
Clough's Pat.....35¢@35&5¢
Howe Bros & Hulbert.....35¢

Cork Knives and Cutters

Bradley's.....10¢
Wadsworth's.....25¢

Cradles

Grain.....50&2¢

Crow Bars

Cast Steel.....\$ doz 4¢
Iron, Steel Points.....\$ doz 3½¢

Curry Combs

Fitch's.....50&10¢@50&10&10¢
Rubberper doz \$10.00.....30¢
Perfect.....50¢

Curtain Pins

Silvered Glass.....net
White Enamel.....net

Cutlery

Beaver Falls & Booth's.....33¼¢
Wostenholme.....\$7.75 to 12

Dampers, &c

Dampers, Buffalo.....50¢
Buffalo Damper Clips.....50¢
Crow Damper.....40¢
Excelsior.....40&10¢

Dividers

See Compasses.

Dog Collars

Embossed, Gilt, Pope & Steven's list
30&10¢
Leather, Pope & Steven's list.....40¢
Brass, Pope & Steven's list.....40¢

Door Springs

Torrey's Rod, regular size.....\$ doz \$1.30
Gray's, \$ gr., \$20.00.....20¢
Bee Rod \$ gr., \$20.00.....20¢
Warner's No. 1, \$ doz, \$2.50; No. 2,
\$3.30.....40&10¢@50¢
Gem (Coll), list April 19, 1886.....10¢
Star (Coll), list April 19, 1886.....20¢
Victor (Coll).....60¢@60&10¢
Champion (Coll).....60¢@60&10¢
Philadelphia, 5 in., \$5.00; 8 in., \$7.75.....35¢
Cowell's, No. 1, \$ doz, \$18.00; No. 2,
\$15.00.....50¢
Rubber, complete, \$ doz, \$4.50.....55&10¢
Hercules.....50¢
Shaw Door Check and Spring.....25¢@30&5¢

Drawing Knives

Wetherby.....75¢@75&10¢
P. S. & W.....75¢@75&10¢
Mix.....75¢@75&10¢
New Haven.....75¢@75&10¢
Merrill.....60&10¢@60&10&5¢
Douglas.....75¢@75&10¢
Watrous.....15&10¢@25¢
L. & I. J. White.....20&5¢
Bradley's.....35¢
Adjustable Handle.....25¢@35¢
Wilkinson's Folding.....25¢@25&5¢

Drills and Drill Stocks

Blacksmith's.....each \$1.75
Blacksmith's Self-Feeding, each \$7.50, 20¢
Breast, P. S. & W.....40&10¢
Breast, Wilson's.....30&5¢
Breast, Millers Falls.....each \$3.00, 15¢
Breast, Bartholomew's.....each \$2.50, 10¢
Ratchet, Merrill's.....25&10¢@40¢
Ratchet, Ingersoll's.....20¢@20&5¢
Ratchet, Parker's.....20¢@20&5¢
Ratchet, Whitney's.....20&10¢
Ratchet, Weston's.....20¢@25¢
Ratchet, Moore's Triple Action.....25¢@30¢
Whitney's Hand Drill, Plain, \$11.00;
Adjustable, \$12.00.....30&10¢
Wilson's Drill Stocks.....30&10¢
Automatic Boring Tools.....\$1.75 to 1.85

Twist Drills

Morse.....50&10¢@50¢
Standard.....50&10¢@50¢
Syracuse.....50&10¢@50¢
Cleveland.....50&10¢@50¢
Williams.....50&10¢@50¢

Drill Bits

See Augers and Bits.

Drill Chucks

See Chucks.

Dripping Pans

Small sizes.....\$ doz 6¼¢
Large sizes.....\$ doz 6¼¢

Egg Beaters

Dover.....\$ doz \$1.50
National.....\$ doz \$4.50.....33¼¢
Family (T. & S. Mfg. Co.), \$ gro \$17.00¢
\$18.00

Duplex (Standard Co.).....\$ gro \$15.00
Rival (Standard Co.).....\$ gro \$12.00
Large Duplex (Standard Co.), \$ doz \$4.50
Triumph (T. & S. Mfg. Co.), \$ gro \$10.50
@ \$11.50

Advance, No. 1.....\$ gro \$10.50
Advance, No. 2.....\$ gro \$10.00
Bryan's.....\$ gro \$15.00
Ayres' Spiral.....\$ gro \$5.00
Double (H. & R. Mfg. Co.).....\$ gro \$16.20
Easy (H. & R. Mfg. Co.).....\$ gro \$14.00
Triple (H. & R. Mfg. Co.).....\$ gro \$16.20
Spinal (H. & R. Mfg. Co.).....\$ gro \$4.50
Paine, Diehl & Co.'s.....\$ gro \$24.00

Egg Poachers

Buffalo Steam Egg Poachers, \$ doz, No.
1, \$6.00; No. 2, \$9.00.....25¢

Electric Bell Sets

Wollensak's.....20¢
Bigelow & Dowse.....20¢

Emery

No. 4 to 46 gr. 150 gr. F F F.

Kegs, \$ doz 4 5 5 24¢
5 5 5 24¢
1/2 kegs, \$ doz 4 5 5 24¢
10-lb cans, 10 5 5 3 ¢
In case.....6 ¢ 6½¢ 5 ¢
10-lb cans, less than 10.....10 ¢ 10 ¢ 7½¢

Enamelled and Tinned Ware

See Hollow-Ware.

Escutcheon Pins

Iron, list Nov. 11, 1885.....50&10¢@50&10&5¢
Brass.....60¢@60&5¢

Escutcheons

Door Lock.....Same dis as Door Locks.
Brass Thread.....60¢@60&10¢
Wood.....25¢

Faucets

Fenn's.....40¢
Bocher's Pat. Rubber Ball.....25¢
Fenn's Cork Stops.....33¼¢
Star.....60¢
Frary's Pat. Petroleum.....40&5¢
B. & L. B. Co.....50¢
West's Lock, Open and Shut Key.....50¢
Star, Metal Plug, new list.....40¢
Lockport Metal Plug, reduced list.....40¢
Metallic Key, Leather Lined.....60&10¢
Cork Lined.....70&5¢@70&10¢
Burnside's Red Cedar.....50¢
Burnside's Red Cedar, bbl lots.....50&10¢
John Somers'.....40¢
Peerless Best Block Tin Key.....40¢
IXL, 1st quality, Cork Lined.....50¢
Diamond Lock.....40¢
Perfection, Fla. Red Cedar.....50¢
Goodenough Cedar.....50¢
Boss Metallic Key.....50¢
Reliable Cork Lined.....50¢
Western Pattern Cork Lined.....50¢
Self-Measuring.....50¢
Enterprise, \$ doz \$50.00.....20&10¢
Lane's, \$ doz \$36.00.....25&10¢
Victor, \$ doz \$36.00.....25&10¢

Feloe Plates

\$ doz 6¢@6¼¢

Fifth Wheels

Derby and Cincinnati.....45&5¢

Files

Domestic.....60&10¢@60&10&5¢
Nicholson Files, Rasps, &c.....60&10¢@60&10&5¢
Nicholson (X. F.) Files.....10&5¢
Nicholson's Royal Files (Seconda).....25¢
75¢ (extra prices on certain sizes)
Other makers, best brands
60&10¢@60&10&10¢
Fair brands.....60&10¢@60&10&10¢
Second quality.....70&10¢@75&10¢
Nicholson's Horse Rasps.....60&10¢@60&10&5¢
Heller's Horse Rasps.....60&7½¢@60&10¢
McCauley's Horse Rasps.....50&10¢

Imported

J. & Riley Carr.....list, April 1, 1883, 15¢
J. & Riley Carr Horse Rasps.....10¢
Moss & Gamble.....list, April 1, 1883, 15¢
Butcher's.....Butcher's list, 20¢
Stubs.....Stubs list, 25¢@30¢
Turton's.....Turton's list, 20¢@25¢
Greaves' Horse Rasps.....American list, 60¢

Fluting Machines

Knox, 4½-Inch Rolls.....\$3.25 each; 35¢
Knox, 6-Inch Rolls.....\$3.60 each; 35¢
Eagle, 3½-Inch Roll, \$2.15.....35¢
Eagle, 5½-Inch Roll, \$2.85.....35¢
Crown, 4½ in., \$3.50; 6 in., \$4.00; 8 in.,
\$6.50 each.....35¢
Crown Jewel, 6 in., \$3.00; 6 in., \$3.40; 7 in.,
\$4.50 each.....35¢
Domestic Fluter.....\$1.50 each net
Geneva Hand Fluter, White Metal.....\$ doz \$12, dis 25¢
\$12.50; 3, \$10.00.....30¢
Shepard Hand Fluter, No. 85 \$ doz
\$15.30.....4½¢
Shepard Hand Fluter, No. 110 \$ doz
\$11.00.....40¢
Shepard Hand Fluter, No. 95 \$ doz
\$8.00.....40¢
Clark's Hand Fluter, \$ doz \$15.00.....35¢
Combined Fluter and Sad Iron,
\$ doz \$15.00.....30¢
Buffalo.....\$ doz \$10.00.....10¢

Fluting Scissors

45¢

Fodder Squeezers

Blair's.....\$ doz \$2.00
Blair's "Climax".....\$ doz \$1.25

Forks

Hay, Manure, &c., Asso. List.....65¢
Hay, Manure, &c., Phila. List.....60¢@60&5¢
Plated, see Spoons.

Freezers, Ice Cream

Buffalo Champion.....60&10&5¢
Shepard's Lightning.....85¢
White Mountain.....80¢

Fruit and Jelly Presses

Enterprise Mfg. Co.....20&10¢@30¢
Henis.....\$ doz \$3.75@4.00
P. D. & Co.....\$ doz \$3.75@4.00
Shepard's Queen City.....40¢

Fry Pans

High List.....75¢@75&10¢
No.....0 1 2 3 4
\$ doz \$3.75 \$4.70 \$5.30 \$5.95 \$6.55
No.....5 6 7 8
\$ doz \$7.50 \$8.75 \$10.00 \$11.25

Low List

No.....0 1 2 3 4
\$ doz \$3.00 \$3.75 \$4.25 \$4.75 \$5.25
No.....5 6 7 8
\$ doz \$6.00 \$7.00 \$8.00 \$9.00

Fuse

\$ 1000 ft.

Common Hemp Fuse, for dry ground, \$2.70
Common Cotton Fuse, for dry ground, 2.85
Single Taped Fuse, for wet ground, 4.75
Double Taped Fuse, for very wet gr., 6.00
Triple Taped Fuse, for very wet gr., 7.25
Small Gutta Percha Fuse, for water, 7.50
Large Gutta Percha Fuse, for water, 12.00

Gauges

Marking, Mortise, &c.....60&10¢
Starrett's Surface, Center and Scratch,
25&10¢
Wire, low list.....10&10¢
Wire, Wheeler, Madden & Co.....10¢
Wire, Morse's.....60&5¢@50¢
Wire, Brown & Sharpe's.....10¢@20¢

Gimlets

Nail and Spike.....50&10&5¢
"Eureka" Gimlets.....40&10¢
"Diamond" Gimlets.....\$ gr \$5.00
Double Cut, Shepardson's.....40&5¢
Double Cut, Ives.....60¢@60&5¢
Double Cut, Douglas's.....40&10¢
"Bee" \$ gr \$12.....25¢@25&5¢

Glue

Le Page's Liquid.....25¢@25&5¢
Upton's Liquid.....35¢
Le Page & Co.'s Improved Process.....25¢@25&5¢

Glue Pots

Tinned.....40¢
Enamelled.....40&5¢
Family, Howe's "Eureka".....40¢
Family, L. F. C.'s "Handy".....50¢

Grindstones

Small, at factory.....\$ ton \$7.50@9.00

Grindstone Fixtures

Sargent's Patent.....70&10¢
Reading Hardware Co.....30&10¢

Hack Saws

See Saws.

Halters

Covert's, Rope, ¼-in. Jute.....50&3¢
Covert's, Rope, ½-in. Hemp.....40&2¢
Covert's Adj. Rope Halters.....40&2¢
Covert's Hemp Horse and Cattle Tie.....50&3¢
Covert's Jute Horse and Cattle Tie.....60&10&3¢

Hammers

Handled Hammers—
Maydole's, list Dec. 1, '85.....25¢@25&10¢
Buffalo Hammer Co., list Jan. 15, '87
Humason & Beckley.....50&5¢@50&10¢
Atha Tool Co.....40&10¢@50¢
Fayette R. Plumb.....40&10¢@50¢
C. Hammond & Son.....40&10¢@50¢
Verres' Magnetic Tack, Nos. 1, 2, 3, \$1.25, 1.50 &
1.75.....30&10¢
Nelson Tool Works.....40&10¢
Warner & Nobles.....30¢@25¢
Peck, Stow & Wilcox.....30¢@10¢
Sargent's.....30¢@10¢

Heavy Hammers and Sledges

3 lb and under.....\$ doz 40¢ 60&10¢
3 to 5 lb.....\$ doz 30¢ 40&10¢
Over 5 lb.....\$ doz 30¢ 40&10¢
Wilkinson's Smiths.....10¢@11¢

Handcuffs and Leg Irons

Providence Tool Co., Handcuffs, \$15.00
Providence Tool Co., Leg Irons, \$25.00
\$ doz.....10¢
Tower's.....25¢
Daley's Improved Handcuffs: 2 Hands,
Polished, \$ doz \$48.00; Nickel-
ed, \$57.00; 3 Hands, Polished, \$ doz
\$72.00; Nickel-ed, \$84.00.....25¢

Handles

Iron,

Cross-Cut Saw Handles—
 Atkins, No. 1 Loop, 30¢; No. 3, 22¢; No. 2 and 4, Reversible, 25¢.
 Boynton's Loop Saw Handles, 50¢.15¢
 Champion.15¢

Hangers—

Barn Door, old patterns.60¢10¢10¢70¢
 Barn Door, New England.60¢10¢10¢70¢
 Samson Steel Anti-Friction.55¢
 Orleans Steel.55¢
 Hamilton Wrought Wood Track.55¢
 U. S. Wood Track.65¢
 Champion.60¢10¢
 Rider and Wooster, Medina Mfg. Co.'s list.70¢
 Climax Anti-Friction.60¢
 Climax Anti-Friction for Wood Track.55¢
 Zenith for Wood Track.55¢
 Reed's Steel Arm.50¢
 Challenge, Barn Door.50¢
 Sterling's Improved (Anti-Friction).10¢
 Victor, No. 1, \$15.00; No. 2, \$16.50; No. 3, \$18.00.50¢25¢
 Cheritree.50¢10¢
 Kidder's.50¢10¢60¢
 The "Boss".60¢
 Best Anti-Friction.60¢
 Duplex (Wood Track).60¢
 Terry's Pat., ½ doz pr. 4 in. \$10.00; 5 in. \$12.00.50¢55¢50¢10¢
 Cronk's Pat., No. 4, \$12.00; No. 5, \$14.40; No. 6, \$18.00.50¢15¢60¢
 Wood Track Iron Clad, ½ ft. 10¢.50¢

Carrier Steel Anti-Friction.50¢50¢50¢
 Architect, ½ set \$6.00.30¢
 Eclipse.20¢10¢
 Felix, ½ set \$4.50.30¢
 Richards.30¢30¢10¢
 Lane's Steel Anti-Friction.40¢10¢50¢
 Ball Bearing Door Hanger.20¢10¢25¢10¢
 Warner's Pat.20¢20¢10¢
 Stearns' Anti-Friction.20¢20¢10¢
 Stearns' Challenge.25¢10¢25¢10¢10¢
 Faultless.40¢40¢50¢
 American, ½ set \$6.00.20¢10¢
 Rider & Wooster, No. 1, 65¢; No. 2, 75¢.40¢
 Paragon, Nos. 1, 2 and 3.40¢10¢
 Paragon, Nos. 5, 6, 7 and 8.20¢10¢
 Crescent.60¢60¢10¢
 Nickel, Cast Iron.50¢
 Nickel, Malleable Iron and Steel.40¢
 Scranton Anti-Friction Single Strap.33¢45¢
 Scranton Anti-Friction Double Strap.40¢
 Universal Anti-Friction.40¢
 Wild West, 4 in. Wheel, \$15.00; 5 in. Wheel, \$21.00.45¢
 Star.40¢10¢40¢10¢50¢
 May.50¢50¢50¢10¢
 Barry, \$6.00.40¢10¢

Harness Snaps—

See Snaps.

Hatchets—

List Jan. 1, 1889.35¢40¢
 Isaiah Blood.40¢45¢
 Hunt's Shingling, Lath and Claw.40¢45¢
 Hunt's Broad.40¢10¢50¢
 Buffalo Hammer Co.40¢10¢50¢
 Hurd's.40¢10¢50¢
 Fayette R. Plumb.40¢10¢50¢
 Wm. Mann, Jr., & Co.50¢50¢55¢
 Underhill Edge Tool Co.40¢50¢50¢
 Underhill's, Haines and Bright.40¢50¢
 C. Hammond & Son.40¢10¢50¢
 Simmons'.40¢10¢50¢
 Peck's.40¢10¢40¢10¢50¢
 Kelly's.50¢50¢55¢
 Sargent & Co.50¢
 Ten Eyck Edge Tool Co.40¢10¢40¢10¢50¢
 Collins.10¢

Hay and Straw Knives—

Lightning, Mfrs. price ½ doz \$18.00, 25¢ But J. bbers frequent y give extras.
 Electric.½ doz \$11
 Gem.½ doz \$10
 Wadsworth's.40¢75¢40¢10¢
 Carter's Needle.½ doz \$11.50¢\$12.00
 Heath's.½ doz \$13.50¢\$14.00
 Auburn Hay, Com. and Spear Point.50¢
 Auburn, Straw.40¢

Hinges—

Wrought Iron Hinges
 Strap and T.75¢75¢55¢
 Screw Hook and Eye.14 to 20 in. ½ doz \$34¢
 Strap.22 to 36 in. ½ doz \$24¢
 Heavy Welded.6 to 12 in. ½ doz \$34¢
 Hook.14 to 20 in. ½ doz \$34¢
 22 to 36 in. ½ doz \$34¢
 Screw Hook.½ in. ½ doz \$1.50
 and Eye.½ in. ½ doz \$2.45 10¢
 Rolled Blind Hinges, Nos. 32 and 34.50¢10¢
 Rolled Blind Hinges, Nos. 232 and 234.55¢10¢
 Rolled Plate.70¢10¢
 Rolled Raised.70¢10¢
 Plate Hinges 8, 10 & 12 in. ½ doz \$5¢
 "Providence" over 12 in. ½ doz \$45¢
Spring Hinges—
 Geer's Spring and Blank Butts.40¢
 Union Spring Hinge Co.'s list, March, 1886.20¢
 Acme and U. S.30¢
 Empire and Crown.20¢
 Hero and Monarch.50¢
 American, Gem, and Star, Japaned.20¢
 American, Gem, and Star, Bronzed.net
 Oxford, Bronze and Brass.net
 Barker's Double Acting.20¢10¢
 Union Mfg. Co.25¢
 Bommer's.30¢
 Buckman's.15¢20¢
 Chicago.30¢
 Wiles'.10¢
 Devore's.40¢
 Rex.40¢

Gate Hinges—

Western.½ doz \$4.40, 60¢
 N. E. Reversible.½ doz \$7.00, 55¢
 Clark's, Nos. 1, 2, 3.½ doz \$5.20, 55¢10¢
 N. Y. State.½ doz \$5.00, 55¢10¢
 Automatic.½ doz \$12.50, 50¢
 Common Sense.½ doz pair \$4.50, 50¢
 Seymour's.45¢10¢
 Shepard's.60¢10¢50¢
 Reed's Latch and Hinges.½ doz \$12.00, 50¢

Blind Hinges—

Parker.75¢25¢
 Palmer.50¢55¢10¢
 Seymour.70¢25¢
 Nicholson.45¢10¢
 Huffer.50¢
 Clark's, Nos. 1, 5, 6, 40 and 50.75¢10¢50¢80¢

Clark's Mortise Gravity.50¢
 Sargent's, Nos. 1, 3, 5, 11, 13.75¢10¢75¢10¢50¢
 Sargent's, No. 12.75¢10¢10¢
 Reading's Gravity.75¢10¢75¢10¢50¢
 Shepard's Noiseless Niagara Buffalo, Champion, Steamboat, Clark's Old Pattern and Clark's Tip Pattern.75¢10¢50¢
 Shepard's O. S., Lull & Porter.75¢10¢
 Shepard's A. C., Lull & Porter.75¢10¢
 Shepard's Queen City Reversible.75¢10¢
 Clark's Lull & Porter, Nos. 0, 1, 14, 2, 3, 5.75¢10¢25¢
 North's Automatic Blind Fixtures, No. 2, for Wood, \$10.50; No. 3, for Brick, \$13.50.25¢25¢

Hoes—

Handled—
 Garden, Mortar, &c.65¢
 Planter's, Cotton, &c.65¢
 Warren Hoe.60¢
 Magic.½ doz \$4.00
Eye—
 D. & H. Scovill.20¢
 Lane's Crescent Bladed Pattern.45¢50¢
 Lane's Razor Blade, Scovill Pattern.30¢
 Maynard, S. & O. Pat.45¢50¢
 Sandusky Tool Co., S. & O. Pat.60¢
 Hubbard & Co., S. & O. Pat.60¢
 Chattanooga Tool Co., S. & O. Pat.60¢
 Grub.60¢60¢10¢

Hog Rings and Ringers—

Hill's Improved Ringers.½ doz \$4.50
 Hill's Old Style Ringers.½ doz \$3.00
 Hill's Tongue.½ doz \$4.50
 Hill's Rings.½ doz \$2.25¢\$2.40
 Perfect Ringers.½ doz bxs \$1.75¢\$2.00
 Perfect Ringers.½ doz \$2.50
 Blair's Hog Ringers.½ doz \$2.60¢\$2.85
 Blair's Hog Ringers.½ doz \$5.00¢\$1.00
 Champion Ringers, Double.½ doz \$2.50
 Brown's Ringers.½ doz \$2.00
 Brown's Ringers.½ doz \$1.25¢\$1.30

Hoisting Apparatus—

"Moore's" Hand Hoist, with Lock Brake.20¢
 "Moore's" Differential Pulley Block.40¢
 Energy Mfg. Co.'s.35¢

Holders, File and Tool—

Bals Pat.½ doz \$4.00; 25¢
 Nicholson File Holders.20¢

Hollow-Ware—

Iron—

Stove Hollow-Ware—
 Ground.60¢60¢5¢
 Unground.60¢10¢60¢10¢10¢
 Enamelled Hollow-Ware—
 Maslin Kettles.65¢10¢
 Boilers and Saucepans.40¢50¢
 Tinned Boilers and Saucepans.40¢
 Gray Enamelled Ware—
 Stove.50¢50¢55¢
 Maslin Kettles.60¢10¢60¢10¢10¢
 Boilers and Saucepans.40¢50¢
 Agate and Granite Ware.25¢
 Rustless Hollow-Ware.50¢50¢55¢
 Galvanized Tea-Kettles—
 Inch.6¢ 7 8 9
 Each.65¢ 60¢ 65¢ 75¢

Silver Plated—

4 mo. or 5 ½ cash in 30 days.
 Reed & Barton.75¢78¢
 Meriden Britannia Co.40¢50¢
 Simpson, Hall, Miller & Co.40¢50¢
 Rogers & Brother.40¢50¢
 Hartford Silver Plate Co.40¢50¢55¢
 William Rogers Mfg. Co.40¢50¢55¢

Hooks—

Cast Iron—

Bird Cage, Sargent's list.60¢10¢10¢
 Bird Cage, Reading.60¢10¢10¢
 Clothes Line, Sargent's list.60¢10¢10¢
 Clothes Line, Reading list.60¢10¢60¢10¢10¢
 Ceiling, Sargent's list.55¢10¢10¢
 Harness, Reading list.55¢10¢55¢10¢10¢
 Coat and Hat, Sargent's list.55¢10¢60¢10¢
 Coat and Hat, Reading.50¢10¢50¢10¢10¢
Wrought Iron—
 Cotton.½ doz \$1.25
 Cotton Pat. (N. Y. Mallet & Handle Wks).30¢
 Tassel and Picture (T. & S. Mfg. Co.).50¢
 Wrought Staples, Hooks, &c.See Wrought Goods.

Wire—

Wire Coat and Hat, Gem, list April, 1886.45¢
 Wire Coat and Hat, Miles', list April, 1886.45¢
 Indestructible Coat and Hat.45¢
 Wire Coat and Hat, Standard.45¢
 Belt.75¢10¢80¢
Miscellaneous.
 Grass, No. 2, \$2.00; No. 3, \$2.25; No. 4, \$2.50.
 Bush.55¢60¢
 Whitcomb's Patent.55¢
 Hooks and Eyes—Malleable Iron.70¢70¢10¢
 Hooks and Eyes—Brass.60¢10¢10¢
 Fish Hooks, American.60¢
 Bench Hooks.See Bench Stops.

Horse Nails—

Nos. 6 7 8 9 10
 Ausable.25¢ 26¢ 25¢ 24¢ 23¢
 Clinton, Fin.24¢ 22¢ 21¢ 20¢ 19¢
 Essex.25¢ 26¢ 25¢ 24¢ 23¢
 Lyra.25¢ 23¢ 22¢ 21¢ 20¢
 Snowden.25¢ 23¢ 22¢ 21¢ 20¢
 Putnam.25¢ 21¢ 20¢ 19¢ 18¢
 1000 lb in year 15¢
 Vulcan.23¢ 21¢ 20¢ 19¢ 18¢
 Northwest'n.25¢ 23¢ 22¢ 21¢ 20¢
 Globe.23¢ 21¢ 20¢ 19¢ 18¢
 Boston.23¢ 21¢ 20¢ 19¢ 18¢
 A. C.25¢ 23¢ 22¢ 21¢ 20¢
 C. B.-K.25¢ 23¢ 22¢ 21¢ 20¢
 Champlain.23¢ 20¢ 25¢ 24¢ 23¢

New Haven.28¢ 26¢ 25¢ 24¢ 23¢
 Saranac.23¢ 21¢ 20¢ 19¢ 18¢
 Champion.25¢ 23¢ 22¢ 21¢ 20¢
 Capewell.28¢ 26¢ 25¢ 24¢ 23¢
 Star.23¢ 21¢ 20¢ 19¢ 18¢
 Anchor.23¢ 21¢ 20¢ 19¢ 18¢
 Western.23¢ 21¢ 20¢ 19¢ 18¢
 Empire Bronzed.14 ¢ lb.
Horse Shoes—See Shoes Horse.

Hose, Rubber—

Competition.75¢10¢75¢10¢55¢
 Standard.70¢70¢10¢
 Extra.60¢60¢10¢
 N. Y. B. & P. Co., Extra.50¢
 N. Y. B. & P. Co., Dundee.60¢10¢55¢

Huskers—

Blair's Adjustable.½ gr \$8.00
 Blair's Adjustable Clipper.½ gr 7.00

Indurated Fiber-Ware.

Spittoons, No. 2, ½ doz.\$6.75
 Basins, Ringed, ½ doz, No. 1, \$3.70; No. 2, \$3.10; No. 3.\$2.70
 Washbuds, Nested, Nos. 0, 1, 2 and 3 (4 pieces), ½ doz. nests.\$16.87
 Hotchkiss, Nested, Nos. 1, 2, 3 and 4 (4 pieces), ½ doz. nests.\$8.37
 Butter Bowls, 15, 17 and 19-inch (3 pieces), ½ doz. nests.\$6.75
 Liquid Measures, pt., qt., 2 qt. and funnel (4 pieces) ½ set.\$3.00
 Dry Measures, 1, 2, 4, 8 and 16 qts. (5 pieces), ½ set.\$2.25
 See also *Patls.*

Jack Screws—See Screws.

Kettles— Spun, Stamped.
 Brass, 7 to 17 in., ½ lb.24¢ 21¢
 Brass, larger than 17 in.26¢
 Enamelled and Tea Kettles.See Hollow-Ware.

Keys—

Lock Ass'n list Dec. 30, 1886.50¢10¢60¢54¢
 Eagle, Cabinet, &c.33¢52¢
 Hotchkiss, Brass, Blanks.40¢
 Hotchkiss, Copper and Tinned.40¢
 Hotchkiss' Pad, and Cab.35¢
 Ratchet Bed Keys.½ doz \$4.00, 15¢
 Wollensack Tinned.50¢10¢

Knife Sharpeners—

Parkin's Applewood Handles.½ doz \$6.00, 40¢
 Parkin's Rosewood or Cocobolo.½ doz \$9.00.40¢

Knives—

Wilson's Butcher Knives.25¢30¢
 Ames' Butcher Knives.25¢
 Foster Bros. Butcher Knives.40¢10¢
 Nichols' Butcher Knives.40¢10¢
 Ames' Shoe Knives.20¢25¢
 Ames' Bread Knives.½ doz \$1.50, 15¢20¢
 Moran's Shoe and Bread.20¢
 Hay and Straw.See Hay Knives.
 Table and Pocket.See Cutlery.
 Corn, Auburn Mfg. Co. Western Pat.\$2.00
 Corn, Auburn Mfg. Co. Crescent.\$3.50

Knobs—

Door Mineral.65¢68¢
 Door Por. Jap'd.75¢78¢
 Door Por. Nickel.\$2.00¢\$2.25
 Door Por. Plated, Nickel.\$2.00¢\$2.25
 Drawer, Porcelain.60¢10¢60¢10¢10¢
 Hemlock Door Knobs.40¢10¢50¢
 Yale & Towne Wood, list Dec. 1886.65¢10¢
 Furniture Plain.75¢ gro 10¢ 10¢
 Furniture, Wood Screws.25¢10¢
 Base, Rubber Tip.70¢10¢55¢
 Picture, Judd's.60¢10¢10¢70¢
 Picture, Sargent's.70¢10¢
 Picture, Hemlock.35¢55¢
 Shutter, Porcelain.65¢10¢
 Carriage, Jap.½ gro 80¢, 60¢10¢

Ladles—

Melting, Sargent's.55¢10¢
 Melting, Reading.35¢10¢
 Melting, Monroe's Pat.½ doz \$4.00, 40¢
 Melting, P. S. & W.35¢10¢40¢
 Melting, Warner's.30¢

Lawn Mowers—

Standard List.50¢10¢
 Quaker City.60¢10¢
 Enterprise.60¢10¢

Lanterns—

Tubular—
 Plain with Guards, ½ doz.\$4.00¢\$4.25
 Lift Wire, with Guards.\$4.50¢\$4.75
 Square Plain, with Guards.\$4.00¢\$4.25
 Sq. Lift Wire, with Guards.\$4.25¢\$4.50
 Without Guards, 25¢ ½ doz less.
Miscellaneous.
 Police, Small, \$6.00; Medium, \$7.25; Large, \$9.75.20¢25¢

Lemon Squeezers—

Porcelain Lined, No. 1.½ doz \$6.00, 25¢30¢
 Wood, No. 2.½ doz \$3.00, 35¢
 Wood, Common.½ doz \$1.70¢\$1.75
 Dunlap's Improved.½ doz \$3.75, 20¢
 Sammla's, No. 1, \$5.00; No. 2, \$9.12.
 "The Boss".½ doz \$2.50
 Dean's, Nos. 1, ½ doz \$6.50; 2, \$3.35; 3, \$1.90.
 Little Giant.50¢50¢55¢
 King.40¢55¢

Lines—

Cotton and Linen Fish, Draper's.50¢
 Draper's Chalk.60¢
 Draper's Mason's Linen, 84 ft., No. 1, \$1.25; No. 2, \$1.75; No. 3, \$2.25; No. 4, \$2.75; No. 5, \$3.25.25¢
 Cotton Chalk.50¢
 Samson, Cotton, No. 4, \$2; No. 4½, \$2.25.10¢
 Silver Lake, Braided, No. 0, \$6.00; No. 1, \$6.50; No. 2, \$7.00; No. 3, \$7.50.25¢
 Mason's Linen, No. 3½, \$1.50; No. 4, \$2.00; No. 4½, \$2.50.45¢
 Wire Clothes, No. 18, \$3.00; No. 19, \$3.00; No. 20, \$2.50.

Ventilator Cord, Samson Braided, White or Drab Cot.½ doz \$7.50, 20¢

Locks, &c.—

Door Locks, Latches, &c.
 List Dec. 30, '86, chgd Feb. 2, '87.50¢10¢60¢55¢
 Mallory, Wheeler & Co., list July, '88.50¢10¢60¢
 Sargent & Co., list Aug. 1, '88.55¢25¢
 Reading Hardware Co., list Feb. 2, '88.10¢60¢10¢
 Livingston & Co.55¢60¢10¢
 Note.—Lower net prices often made.
 Perkins' Burglar Proof.60¢25¢
 Plate.33¢22¢
 F. Many's "Extension Cylinder" \$10.50 ½ doz.
 Barnes Mfg. Co.40¢40¢10¢
 Yale Corrugated Key.33¢45¢
 Deitz Flat Key.30¢
 L. & C. Round Key Latches.30¢10¢
 L. & C. Flat Key Latches.33¢10¢
 Romer's Night Latches.15¢
 Yale, new list.33¢
 "Shepardson" or "U. S.".40¢10¢
 "Felter" or "American".40¢10¢
 Seed's N. Y. Hasp Lock.25¢
Cabinet—
 Eagle, Gaylord Par. } list March, '84, rev. ker and Corbin. } Jan. 1, '85.33¢22¢
 Deitz, Nos. 36 to 39.40¢
 Deitz, Nos. 51 to 63.40¢10¢
 Deitz, Nos. 86 to 90.40¢10¢
 Stoddard Lock Co.30¢35¢45¢
 "Champion" Night Latches.40¢
 Barnes Mfg. Co.40¢40¢10¢
 Eagle and Corbin Trunk.25¢25¢
 "Champion" Cab. and Combin.33¢45¢
 Yale.35¢
 Romer's.25¢

Padlocks—

List Dec. 23, '84.75¢75¢10¢
 Yale Lock Mfg. Co.'s.33¢45¢
 Eagle.25¢25¢
 Eureka, Eagle Lock Co.40¢25¢
 Romer's, Nos. 0 to 91.30¢
 Romer's Scandinavian, &c., Nos. 150.50¢. 15¢
 A. E. Deitz.40¢
 "Champion" Padlocks.40¢
 Hotchkiss.30¢
 Star.45¢
 "Horseshoe".½ doz, \$0, 40¢40¢10¢
 Barnes Mfg. Co.40¢40¢10¢
 No. 3's.25¢
 Brown's Pat.25¢
 Scandinavian.90¢90¢10¢
 Frain's Pat. Scandinavian low list.60¢
 Ames Sword Co. up to No. 150.40¢
 Ames Sword Co. above No. 150.50¢

Lumber Tools.

Ring Peavies, "Blue Line".½ doz \$20.00
 Ring Peavies, Common.½ doz \$18.00
 Steel Socket Peavies.½ doz \$21.00
 Mail Iron Socket Peavies.½ doz \$19.00
 Cant Hooks, "Blue Line".½ doz \$16.00
 Cant Hooks, Common Finish.½ doz \$14.00
 Cant Hooks, Mail, Socket Clasp, "Blue Line" Finish.\$16.00
 Cant Hooks, Mail, Socket Clasp, Common Finish.\$14.50
 Cant Hooks, Clip Clasp, "Blue Line" Finish.½ doz \$14.00
 Cant Hooks, Clip Clasp, Common Finish.½ doz \$12.00
 Hand Spikes.½ doz 8 ft., \$15.00; 8 ft., \$20.00
 Pike Poles, Pike & Hook, ½ doz, 12 ft., \$11.50; 14 ft., \$12.50; 16 ft., \$14.50; 18 ft., \$17.50; 20 ft., \$21.50.
 Pike Poles, Pike only, ½ doz, 12 ft., \$10.00; 14 ft., \$11.00; 16 ft., \$13.00; 18 ft., \$14.00; 20 ft., \$20.00.
 Pike Poles, not iron

Molasses Gates—

Stebbin's Pat.	70¢@70¢1/2
Stebbin's Genuine	60¢@10¢10
Stebbin's Tinned Ends	40¢10
Chase's Hard Metal	50¢10
Bush's Pattern	70¢@70¢10
Weed's	30¢10

Boss, # doz: Nos. 1, 7; No. 2, 8; No. 3, 8; No. 4, 10. 60¢@10¢10

Money Drawers—

Muzzles—Safety—# doz, \$3.00 dis 25%

Nails, see Trade Report.

Wire Nails & Brads, list July 14, '87 70¢10
Wire Nails, Standard Penny—# keg \$2.50@2.60

Nail Puller—

Curtiss Hammer—# doz \$9, net
Giant No. 1—# doz, \$30.00, 10¢
Pelican—# doz, \$9.00, dis 25¢
Boss—# doz, \$30.00, dis 30¢
Lighting—# doz \$21.00

Nail Sets—

Square—# gr, \$4.00@4.25
Round—# gr, \$3.25
Cannon's Diamond Point—# gr, \$12, 20¢

Nut Crackers—

Table (H. & B. Mfg. Co.)—40¢
Blake's Pattern—# doz \$2.00, dis 10¢
Turner & Seymour Mfg. Co.—50¢

Nuts—

Nuts, off list Jan. 1, 1888: Square, Hex, Hot Pressed—5.4¢, 5.5¢
Cold Punched—5.4¢, 5.5¢
In lots less than 100 lb, # lb, add 1/2¢; 1-lb boxes, add 1¢ to list.

Oakum—

Government—# lb 7¢ @ 8¢
U. S. Navy—# lb 9¢ @ 7¢
Navy—# lb 5¢ @ 6 1/2¢

Oilers—

Zinc and Tin—65¢@65¢10
Brass and Copper—50¢10@50¢10
Malleable, Hammers Improved, No. 1, \$3.60; No. 2, \$4.00; No. 3, \$4.40 # doz

Malleable, Hammers, Old Pattern, same list 40¢
Prior's Pat. or "Paragon" Zinc—60¢10@10¢

Prior's Pat. or "Paragon" Brass—50¢
Olmstead's Tin and Zinc—60¢
Olmstead's Brass and Copper—50¢
Broughton's Zinc—60¢
Broughton's Brass—50¢

Packing, Steam—

Standard—60¢10@60¢10
Extra—50¢10@60¢
N. Y. B. & P. Co., Standard—50¢10@5¢
N. Y. B. & P. Co., Empire—70¢
N. Y. B. & P. Co., Salamander—# lb 65¢, dis 30¢
Jenkins' Standard—# lb 80¢, dis 30¢

Miscellaneous—

American Packing—10¢@11¢
Russia Packing—14¢
Italian Packing—15¢@17¢
Cotton Packing—15¢@17¢
Jute—7¢@8¢

Padlocks—

See Locks.

Pails—

Galvanized Iron—10 12 14
Hill's Light Weight, # doz, \$2.75 3.00 3.25
Hill's Heavy Weight, # doz, 3.00 3.25 3.75
Whiting's—2.75 3.00 3.25
Sidney Shephard & Co.—2.80 3.00 3.40
Iron Clad—2.75 3.00 3.25
Fire Buckets—2.75 3.25 3.50
Buckets, see Well Buckets.

Indurated Fibre Ware—Star Pails, 12 qt—# doz \$4.50
Fire, Stable and Milk, 14 qt—# doz \$5.85

Pencils—

Faber's Carpenters'—high list 50¢
Faber's Round Gilt—# gro \$5.25 net
Dixon's Lead—# gro \$4.50 net
Dixon's Lumber—# gro \$6.75 net
Dixon's Carpenters'—40¢10

Picks—

Railroad or Adze Eye, 5 to 6, \$12.00; 6 to 7, \$13.00—dis 60¢5@60¢10

Picture Nails—

Brass Head, Sargent's list—50¢10@10¢
Brass Head, Combination list—50¢10
Porcelain Head, Sargent's list—50¢10
Porcelain Head, Combination list—40¢10
Niles' Patent—40¢

Pinking Irons—

doz 65¢ net

Pipe, Wrought Iron—

List March 23, 1887.
1 1/4 and under, Plain—55¢
1 1/4 and under, Galvanized—47 1/2¢
1 1/2 and over, Plain—65¢
1 1/2 and over, Galvanized—55¢
Boiler Tubes, Iron—60¢

Planes and Plane Irons—

Wood Planes—Molding—50¢5@50¢10
Bench, First Quality—60¢@60¢5
Bench, Second Quality—60¢10@60¢10
Bailey's (Stanley R. & L. Co.)—40¢10

Iron Planes—Bailey's (Stanley R. & L. Co.)—40¢10
Miscellaneous Planes (Stanley R. & L. Co.)—20¢10
Victor Planes (Stanley R. & L. Co.)—20¢10
Steer's Iron Planes—30¢@30¢5
Meriden Mal. Iron Co.'s—30¢10@30¢10
Davis's Iron Planes—30¢10@30¢10
Birmingham Plane Co.—50¢50¢5
Gage Tool Co.'s Self-Setting—30¢10
Chaplin's Iron Planes—40¢@40¢5
Sargent's—30¢10@30¢10@10¢

Plane Irons—

Plane Irons—20¢10
Plane Irons, Butcher's—\$5.00@5.25 to 4
Plane Irons, Buck Bros.—30¢
Plane Irons, Auburn Tool Co., "This"
tile—40¢
Sandusky Tool Co.:
Single and Cut—30¢
Double—40¢
L. & I. J. White—25¢

Pliers and Nippers—

Button's Patent—30¢10@40¢
Hall's No. 2, 5 in., \$13.50; No. 4, 7 in., \$21.00 # doz, \$12.00@13.50
Humason & Beckley Mfg. Co.—50¢50¢10
Gas Pliers—60¢
Gas Pliers, Custar's Nickel Plated—60¢5
Eureka Pliers and Nippers—40¢
Russell's Parallel—25¢
P. S. & W. Cast Steel—50¢
P. S. & W. Tinner's Cutting Nippers—10¢
Carew's Pat. Wire Cutters—20¢
Morrill's Parallel, # doz, \$12.00—30¢5
Cronk's 8 in., \$15.00; 10 in., \$21.00—40¢40¢5

Plumbs and Levels—

Regular List—70¢10@70¢10
Diston's—45¢10
Pocket Levels—70¢10@70¢10
Davis Iron Levels—30¢
Davis' Inclinoimeters—10¢10

Poppers, Corn—

Round or Square, 1 qt.—# gr \$12.00@15.00
Round or Square, 2 qt.—# gr \$25.00@26.00

Post Hole and Tree Augers and Diggers—

Samson Post Hole Digger, # doz \$36.00, dis 25¢10
Fletcher Post Hole Augers, # doz \$36.00, dis 20¢
Eureka Diggers—# doz \$16.00@17.00
Leed's—# doz \$8.00@9.00
Vaughan's Post Hole Auger, # doz \$13.00@14.00
Kohler's Little Giant—# doz \$18.00
Kohler's Hercules—# doz \$15.00
Kohler's New Champion—# doz \$9.00
Schneider—# doz \$18.00
Ryan's Post Hole Diggers—# doz \$24.00
Cronk's Post Bars, # doz \$60.00, dis 50¢50¢10
Gibb's Post Hole Digger, # doz \$30.00, dis 40¢40¢10

Potato Parers—

White Mountain—# doz \$5.00@5.50
Antrim Combination—# doz \$8.00
Hoosier—# doz \$13.50

Pruning Hooks and Shears—

Diston's Combined Pruning Hook and Saw—# doz \$18.00, dis 20¢10
Diston's Pruning Hook, # doz \$12.00, dis 20¢10
E. S. Lee & Co.'s Pruning Tools—40¢
Pruning Shears, Henry's Pat., # doz \$3.75@4.00 net
Henry's Pruning Shears, # doz \$4.25@4.50 net
Wheeler, M. & C. Co.'s Combination, # doz \$12.00, dis 20¢
Dunlap's Saw and Chisel, # doz \$8.50, dis 30¢
J. Mallinson & Co., No. 1, \$5.25; No. 2, 7.25

Pulleys—

Hot House, Awning, &c.—60¢10
Japanned Screw—60¢10
Brass Screw—60¢10
Japanned Side—60¢10
Japanned Clothes Line—60¢10
Empire Sash Pulley—55¢60¢
Moore's Sash, Anti-Friction—50¢
Hay Fork, Solid Eye, \$1.00; Swivel, \$1.50—dis 50¢10@50¢10
Hay Fork, "Anti-Friction," 5 in. Solid, \$5.70—dis 50¢
Hay Fork, "F" Common and Pat. Fixed—20¢
Hay Fork, Tarbox Pat. Iron—20¢
Hay Fork, Reed's Self-Lubricating—40¢
Shade Rack—60¢
Tackle Blocks—See Blocks
Moore's Anti-Friction 5 in. Wheel, # doz \$12.00—dis 40¢

Pumps—

Cistern, Best Makers—50¢10@60¢
Pitcher Spout, Best Makers—60¢10@60¢
Pitcher Spout, Cheaper Goods—70¢5@70¢10@5¢

Punches—

Saddlers' or Drive, good, # doz—60¢55¢
Bemis & Call Co.'s Cast Steel Drive—50¢5
Bemis & Call Co.'s Springfield Socket—50¢5
Spring, good quality—# doz \$2.50@2.60
Spring, Leach's Pat.—15¢
Bemis & Call Co.'s Spring and Check—40¢
Solid Tinner's—# doz \$1.44, dis 55¢
Tinner's Hollow Punches—20¢2¢
Rice Hand Punches—15¢
Avery's Revolving—30¢10
Avery's Saw-Set and Punch, See Saw Sets.

Rail—

Sliding Door, Wrt Brass, # lb 35¢, dis 15¢
Sliding Door, Bronzed Wrt Iron, # ft. 7¢
Sliding Door, Iron Painted, # foot 4¢, 40¢
Barn Door, Light, In. 1/2, 3/4, 1, 1 1/4, 1 1/2, 2, 3, 4, 5, 6, 7, 8, 9, 10, 11, 12, 13, 14, 15, 16, 17, 18, 19, 20, 21, 22, 23, 24, 25, 26, 27, 28, 29, 30, 31, 32, 33, 34, 35, 36, 37, 38, 39, 40, 41, 42, 43, 44, 45, 46, 47, 48, 49, 50, 51, 52, 53, 54, 55, 56, 57, 58, 59, 60, 61, 62, 63, 64, 65, 66, 67, 68, 69, 70, 71, 72, 73, 74, 75, 76, 77, 78, 79, 80, 81, 82, 83, 84, 85, 86, 87, 88, 89, 90, 91, 92, 93, 94, 95, 96, 97, 98, 99, 100, 101, 102, 103, 104, 105, 106, 107, 108, 109, 110, 111, 112, 113, 114, 115, 116, 117, 118, 119, 120, 121, 122, 123, 124, 125, 126, 127, 128, 129, 130, 131, 132, 133, 134, 135, 136, 137, 138, 139, 140, 141, 142, 143, 144, 145, 146, 147, 148, 149, 150, 151, 152, 153, 154, 155, 156, 157, 158, 159, 160, 161, 162, 163, 164, 165, 166, 167, 168, 169, 170, 171, 172, 173, 174, 175, 176, 177, 178, 179, 180, 181, 182, 183, 184, 185, 186, 187, 188, 189, 190, 191, 192, 193, 194, 195, 196, 197, 198, 199, 200, 201, 202, 203, 204, 205, 206, 207, 208, 209, 210, 211, 212, 213, 214, 215, 216, 217, 218, 219, 220, 221, 222, 223, 224, 225, 226, 227, 228, 229, 230, 231, 232, 233, 234, 235, 236, 237, 238, 239, 240, 241, 242, 243, 244, 245, 246, 247, 248, 249, 250, 251, 252, 253, 254, 255, 256, 257, 258, 259, 260, 261, 262, 263, 264, 265, 266, 267, 268, 269, 270, 271, 272, 273, 274, 275, 276, 277, 278, 279, 280, 281, 282, 283, 284, 285, 286, 287, 288, 289, 290, 291, 292, 293, 294, 295, 296, 297, 298, 299, 300, 301, 302, 303, 304, 305, 306, 307, 308, 309, 310, 311, 312, 313, 314, 315, 316, 317, 318, 319, 320, 321, 322, 323, 324, 325, 326, 327, 328, 329, 330, 331, 332, 333, 334, 335, 336, 337, 338, 339, 340, 341, 342, 343, 344, 345, 346, 347, 348, 349, 350, 351, 352, 353, 354, 355, 356, 357, 358, 359, 360, 361, 362, 363, 364, 365, 366, 367, 368, 369, 370, 371, 372, 373, 374, 375, 376, 377, 378, 379, 380, 381, 382, 383, 384, 385, 386, 387, 388, 389, 390, 391, 392, 393, 394, 395, 396, 397, 398, 399, 400, 401, 402, 403, 404, 405, 406, 407, 408, 409, 410, 411, 412, 413, 414, 415, 416, 417, 418, 419, 420, 421, 422, 423, 424, 425, 426, 427, 428, 429, 430, 431, 432, 433, 434, 435, 436, 437, 438, 439, 440, 441, 442, 443, 444, 445, 446, 447, 448, 449, 450, 451, 452, 453, 454, 455, 456, 457, 458, 459, 460, 461, 462, 463, 464, 465, 466, 467, 468, 469, 470, 471, 472, 473, 474, 475, 476, 477, 478, 479, 480, 481, 482, 483, 484, 485, 486, 487, 488, 489, 490, 491, 492, 493, 494, 495, 496, 497, 498, 499, 500, 501, 502, 503, 504, 505, 506, 507, 508, 509, 510, 511, 512, 513, 514, 515, 516, 517, 518, 519, 520, 521, 522, 523, 524, 525, 526, 527, 528, 529, 530, 531, 532, 533, 534, 535, 536, 537, 538, 539, 540, 541, 542, 543, 544, 545, 546, 547, 548, 549, 550, 551, 552, 553, 554, 555, 556, 557, 558, 559, 560, 561, 562, 563, 564, 565, 566, 567, 568, 569, 570, 571, 572, 573, 574, 575, 576, 577, 578, 579, 580, 581, 582, 583, 584, 585, 586, 587, 588, 589, 590, 591, 592, 593, 594, 595, 596, 597, 598, 599, 600, 601, 602, 603, 604, 605, 606, 607, 608, 609, 610, 611, 612, 613, 614, 615, 616, 617, 618, 619, 620, 621, 622, 623, 624, 625, 626, 627, 628, 629, 630, 631, 632, 633, 634, 635, 636, 637, 638, 639, 640, 641, 642, 643, 644, 645, 646, 647, 648, 649, 650, 651, 652, 653, 654, 655, 656, 657, 658, 659, 660, 661, 662, 663, 664, 665, 666, 667, 668, 669, 670, 671, 672, 673, 674, 675, 676, 677, 678, 679, 680, 681, 682, 683, 684, 685, 686, 687, 688, 689, 690, 691, 692, 693, 694, 695, 696, 697, 698, 699, 700, 701, 702, 703, 704, 705, 706, 707, 708, 709, 710, 711, 712, 713, 714, 715, 716, 717, 718, 719, 720, 721, 722, 723, 724, 725, 726, 727, 728, 729, 730, 731, 732, 733, 734, 735, 736, 737, 738, 739, 740, 741, 742, 743, 744, 745, 746, 747, 748, 749, 750, 751, 752, 753, 754, 755, 756, 757, 758, 759, 760, 761, 762, 763, 764, 765, 766, 767, 768, 769, 770, 771, 772, 773, 774, 775, 776, 777, 778, 779, 780, 781, 782, 783, 784, 785, 786, 787, 788, 789, 790, 791, 792, 793, 794, 795, 796, 797, 798, 799, 800, 801, 802, 803, 804, 805, 806, 807, 808, 809, 810, 811, 812, 813, 814, 815, 816, 817, 818, 819, 820, 821, 822, 823, 824, 825, 826, 827, 828, 829, 830, 831, 832, 833, 834, 835, 836, 837, 838, 839, 840, 841, 842, 843, 844, 845, 846, 847, 848, 849, 850, 851, 852, 853, 854, 855, 856, 857, 858, 859, 860, 861, 862, 863, 864, 865, 866, 867, 868, 869, 870, 871, 872, 873, 874, 875, 876, 877, 878, 879, 880, 881, 882, 883, 884, 885, 886, 887, 888, 889, 890, 891, 892, 893, 894, 895, 896, 897, 898, 899, 900, 901, 902, 903, 904, 905, 906, 907, 908, 909, 910, 911, 912, 913, 914, 915, 916, 917, 918, 919, 920, 921, 922, 923, 924, 925, 926, 927, 928, 929, 930, 931, 932, 933, 934, 935, 936, 937, 938, 939, 940, 941, 942, 943, 944, 945, 946, 947, 948, 949, 950, 951, 952, 953, 954, 955, 956, 957, 958, 959, 960, 961, 962, 963, 964, 965, 966, 967, 968, 969, 970, 971, 972, 973, 974, 975, 976, 977, 978, 979, 980, 981, 982, 983, 984, 985, 986, 987, 988, 989, 990, 991, 992, 993, 994, 995, 996, 997, 998, 999, 1000

Rakes—

Cast Steel, Association goods—65¢
Cast Steel, outside goods—60¢10@70¢
Malleable—70¢@70¢5
Gibbs Lawn Rake—\$12.00, dis 50¢
Canton Lawn Rake—\$8.00, dis 50¢
Ft. Madison Prize Bow Brace and Peck—less
Fort Madison Steel Tooth Lawn Rake—\$6.00—dis 25¢

Razors—

J. R. Torrey Razor Co.—20¢
Wostenholme and Butcher, \$10.00 # 2, dis 10¢

Razor Straps—

Genuine Emerson—60¢@60¢5
Imitation—# doz \$2.00, dis 20¢10@5¢
Torrey's—20¢
Badger's Belt and Com—# doz \$2.00
Lamont Combination—# doz \$4.00

Rivets and Burrs—

Copper—50¢
Iron, list Nov. 17, '87—50¢
Rivet Sets—50¢10
Rods—25¢2¢
Stair, Brass—# doz 40¢
Stair, Black Walnut—# doz 40¢

Rollers—

Barn Door, Sargent's list—60¢10@10¢
Acme Moore's Anti-Friction—55¢
Union Barn Door Roller—70¢

Rope—

Manufacturers' prices for large lots:
Manila—1/4 in. and larger—# lb 15¢
Manila—1/2 in. and larger—# lb 15¢
Manila—3/4 in. and larger—# lb 15¢
Manila Tarred Rope—# lb 14¢
Manila Hay Rope—# lb 13¢
Sisal—1/4 in. and larger—# lb 13¢
Sisal—1/2 in. and larger—# lb 13¢
Sisal—3/4 in. and larger—# lb 13¢
Sisal, Hay Rope—# lb 13¢
Sisal, Tarred Rope—# lb 12¢
Sisal, Medium Lathe Yarn—# lb 12¢
Cotton Rope—# lb 15¢15¢
Jute Rope—# lb 15¢15¢

Rules—

Boxwood—80¢10@80¢10@10¢
Ivory—50¢50¢10¢
Starrett's Rules and Straight Edges, Steel—25¢10

Sad Irons—

From 4 to 10, to factory—# 100 lb, \$2.40@2.55
Self-Heating—# doz \$20.00 net
Self-Heating Tailors—# doz \$18.00 net
Gleason's Shield and Toilet—25¢
Mrs. Pott's Irons—40¢40¢5¢
Enterprise Star Irons—40¢
Combined Fluter and Sad Iron, # doz, \$15.00
Fox Reversible, Self-Fluter—dis 15¢
Chinese Laundry (N. E. Butt Co.) 8¢
New England—dis 15¢
Sensible—dis 15¢
National Self-Heating—dis 30¢

Sand and Emery Paper and Cloth—

List April 19, 1888—40¢40¢10¢
Sibley's Emery and Crocus Cloth—30¢

Sash Cord—

Parker's.....20@254

Parker's..... 30¢25¢
 Howard's..... 55¢
 Bonney's..... 40¢10¢
 Millers Falls..... 40¢40¢10¢
 Trenton..... 40¢50¢40¢10¢
 Merrill's..... 15¢20¢
 Sargent's..... 90¢10¢10¢
 Backus and Union..... 40¢
 Double Screw Leg..... 15¢10¢10¢
 Prentiss..... 20¢5¢25¢
 Simpson's Adjustable..... 40¢40¢
 Moore's..... 30¢
Saw Files—
 Bonney's, Nos. 2 & 3, \$15.00..... dis 40¢10¢
 Stearn's..... 33¢&10¢33¢&10¢10¢10¢
 Stearn's Silent Saw Files..... 33¢&35¢
 Sargent's..... 60¢&10¢
 Hopkins..... ¢ doz \$17.50, dis 10¢
 Reading..... 40¢10¢
 Westworth..... 30¢10¢
 Comb and Hand Vises..... ¢ gr \$12.00
 Cowell Hand Vises..... 20¢
 Bauer's Pipe Vises..... 10¢
Wagon Boxes—
 Per D..... 2½¢
Wagon Jacks—
 Daisy..... ¢ doz \$4.00, dis 25¢
Washer Cutters—
 Smith's Pat..... ¢ doz \$12.00, dis 20¢10¢&10¢
 Johnson's..... ¢ doz \$11.00, dis 33¢&
 Penny's.....
 ¢ doz Pol. \$14; Jap'd, \$16.00, dis 55¢
 Appleton's..... ¢ doz \$16.00, dis 60¢&
 Bonney's..... 30¢10¢
Washers—
 Size..... ½ 5-16 ¾ ½ ¾ 1
 Washers..... 7 5¼ 4¾ 3¾ 3¼ 3¼ 3¼
 In lots less than 200, ¢ D, add ¼¢, 5¢
 boxes 1¢ to list.
Wedges—
 Iron..... ¢ D 3¼¢
 Steel..... ¢ D 4 ¢
Well Buckets, Galvanized—
 Hill's..... ¢ doz, 12 qt, \$4.25; 14 qt, \$5.25
 Iron Clad..... ¢ doz, 14 qt, \$4.25¢&4.50
 Whiting's Flat Iron Band..... \$4.25¢&4.50
 Whiting's Wired Top..... ¢ doz \$4.00¢&4.25
Well Wheels—
 8 in., \$2.25; 10 in., \$2.70; 12 in., \$3.25
Wire—
Iron
 Market, Br. & Ann., Nos. 0 to 18..... 70¢10¢75¢
 Market, Cop'd, Nos. 0 to 18..... 70¢70¢5¢
 Market, Galv., Nos. 0 to 18..... 65¢5¢
 Market, Tin'd, Tinned list Nos. 0 to 18..... 67¢
 Stone, Br. and Ann'd, Nos. 16 to 18..... 72¢72¢65¢
 Stone, Bright and Ann'd, Nos. 19 to 26..... 75¢75¢5¢
 Stone, Br. and Ann'd, Nos. 27 to 36..... 75¢10¢1¢
 Stone, Tinned..... 70¢70¢10¢
 Tinned Broom Wire..... 70¢5¢70¢10¢
 Galvanized Fence..... 65¢
 Annealed Fence, Nos. 8 and 9..... 75¢
 Anneak'd Grape, Nos. 10 to 14..... 75¢
 Bra'd list Jan. 18, 1884..... 15¢20¢
 Copper list Jan. 18, 1884..... 25¢
 Barb Fence..... See Trade Report
 Wire on Spools..... 65¢
 Mallin's Steel and Tin'd Wire on Spools..... 40¢
 Mallin's Brass and Cop. Wire on Spools 30¢
 Co's Steel Wire..... \$6.00 to 2.30¢
 Steel Music Wire, Nos. 13 to 30..... 55¢¢
 Picture Wire..... 60 & 10¢
 Barb Wire Safety Guards.....
 ¢ 1000, \$9.00, dis 25¢
 Wire Clothes Lines, see Lines.
Wire Cloth, Netting, &c.—
 Painted Screen Cloth, ¢ 100 sq. ft.,..... \$1.50¢& \$1.90
 Galvanized Wire Netting..... 75¢75¢5¢
Wire Goods—
 See Bright Wire Goods.
Wire Rope—
 List May 1, 1886.
 Iron..... 40¢
 Cast Steel..... 40¢
Wrenches—
 American Adjustable..... 40¢
 Baxter's Adjustable "S"..... 40¢10¢50¢
 Baxter's Diagonal..... 40¢10¢50¢
 Coes' Genuine..... 55¢43¢
 Coes' "Mechanics"..... 55¢10¢3¢
 Girard Standard..... 70¢10¢
 Machinists', Sterling Wrench Co..... 70¢10¢
 Lamson & Sessions' Engineers'..... 60¢10¢
 Lamson & Sessions' Standard..... 70¢10¢
 Goes' Pattern, Wrought.....
 Girard & Carcultural..... 80¢80¢5¢
 Lamson & Sessions' Agric'l.....
 Sterling Wrought.....
 Bemis & Call's
 Pat. Combination..... 35¢
 Merrick's Pattern..... 35¢
 Briggs' Pattern..... 25¢
 Co's "Mechanics" Pipe..... 40¢5¢
 No. 3 Pipe..... 40¢10¢
 Allen's Pocket (Bright), \$6.00, dis 50¢10¢
 The Favorite Pocket ¢ doz \$1.00, dis 40¢
 Webster's Pat. Combination..... 25¢
 Boardman's..... 20¢10¢
 Always Ready..... 25¢5¢
 Alligator..... 50¢
 Donohue's Engineer..... 20¢10¢1¢
 Acme, Bright..... 60¢&3¢
 Acme, Nickle'd..... 50¢&3¢
 Walker's..... 55¢&3¢
 Diamond Steel..... 55¢&3¢
Wringers, Clothes—
 List Jan., 1886, \$3.00 off.
Wrought Goods—
 Staples, Hooks, &c., list Jan. 12, 1886,
 80¢20¢&8¢4¢25¢

